AusNet

Secure supply and enable connections: Pakenham South & Surrounding Areas

Regulatory Investment Test for Distribution (RIT-D)

Final Project Assessment Report

6th November 2026

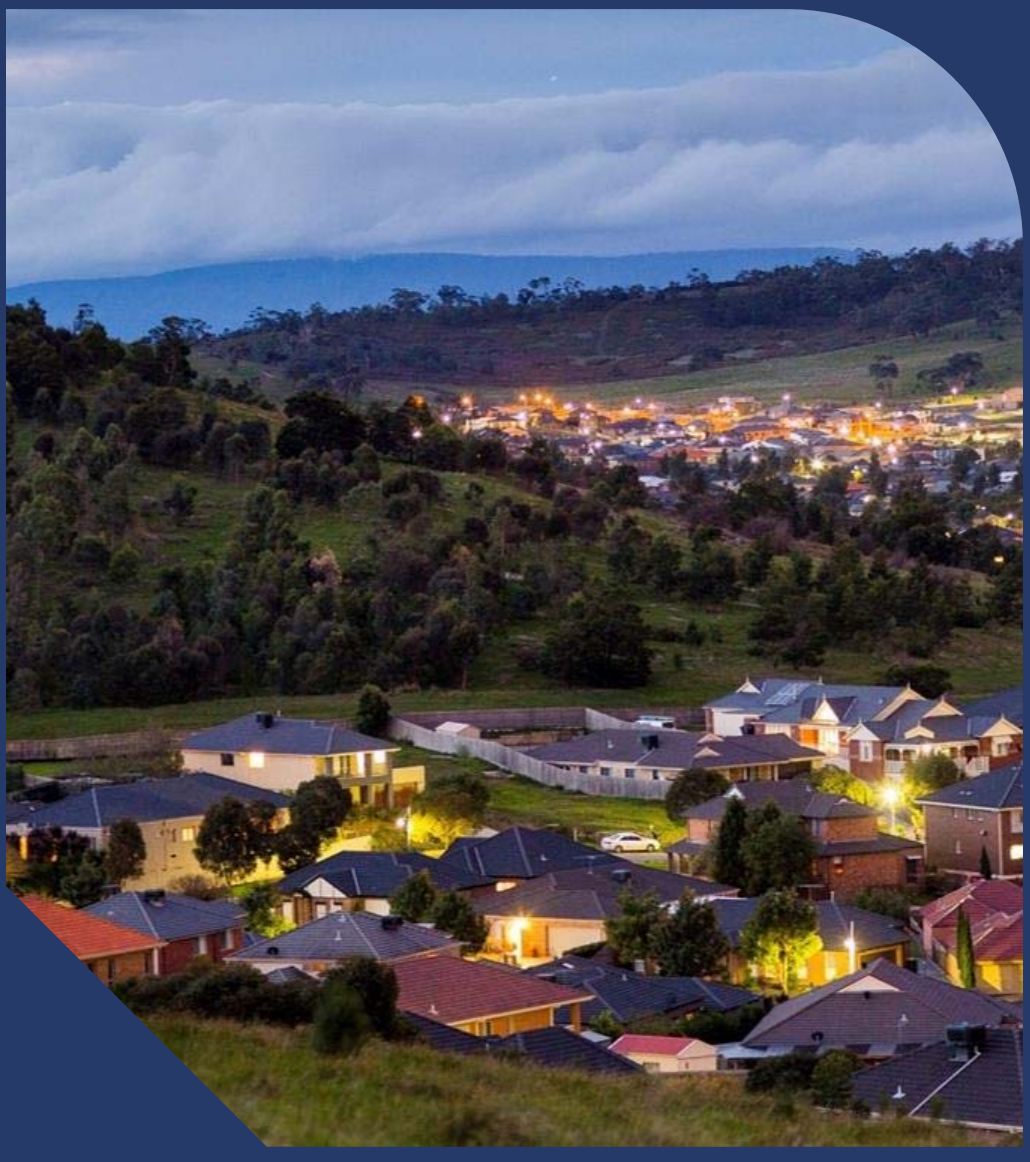


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1. Executive summary

AusNet is a regulated Victorian Distribution Network Service Provider (**DNSP**) that provides electricity distribution services to approximately 845,000 customers. Our electricity distribution network covers eastern rural Victoria and the outer northern and eastern Melbourne metropolitan areas.

The Regulatory Investment Test for Distribution (**RIT-D**) is an economic cost-benefit assessment and consultation process designed to identify the most credible option that addresses an identified need on the network, while maximising net economic benefits for stakeholders in the National Electricity Market (**NEM**) – the preferred option.

This RIT-D has been initiated by AusNet to identify the preferred option to address the supply capacity limitations of the Pakenham South & surrounding supply area within the Cardinia municipality of the Victorian Planning Authority's (**VPA**) South East Growth Corridor[1], a rapidly developing region within south-eastern greater metropolitan Melbourne.

Identified need

The Pakenham South & surrounding supply area on the urban fringes of Melbourne's south-eastern suburbs is a vast greenfield development area located between Officer and Cardinia, to the south of the Princes Highway covered by the Pakenham South Employment Precinct Structure Plan (**PSP**)[2], and the Officer South PSP[3].

The population projection for the relevant local government area of Cardinia indicates a growth rate 2.9% per annum on a base of approximately 123,580 people, representing approximately 49,400 households with an expected growth in households of 1,400 per year.

The industries in the region that are expected to experience the strongest growth are: health care and social assistance; retail trade; manufacturing; construction; education and training. AusNet has already received several industrial and commercial customer connection applications in the South East Growth Corridor, including for two large business parks in Pakenham South and Officer South, resulting in more than 30 MVA additional load capacity added to our network. All of these loads are expected to be fully operational by 2029.

The region is supplied in part by AusNet's existing five zone substations Clyde North (**CLN**), Cranbourne East (**CRE**), Officer (**OFR**), Pakenham (**PHM**) and Lang Lang (**LLG**), through a network of 22 kV distribution feeders supplying approximately 122,000 customers.

AusNet has developed electricity demand forecasts for the supply area, updated to reflect the demands of recent summers, electrification activity, solar PV and battery installations, and the abovementioned developments. AusNet has identified from these forecast maximum demands, increasing levels of load-at-risk, where the demand is forecast to exceed the capacity of some parts of the network.

In particular, the maximum demand at zone substations CLN, LLG, OFR, and PHM has already exceeded their respective single contingency (**N-1**) ratings. This is shown in Table 1.

Table 1: **Zone substation forecast PoE10 overload (MVA) inc. available transfers and demand management**

Load-at-risk (MVA)	FY26	FY27	FY28	FY29	FY30	FY31	FY32
CLN (N-1)	10.8	15.7	19.7	23.3	29.0	34.1	41.2
LLG (N-1)	28.7	33.1	33.0	33.1	33.2	33.6	33.9
OFR (N-1)	21.1	28.1	33.2	36.2	38.6	40.5	42.4
PHM (N-1)	28.8	33.2	33.0	33.0	33.4	34.6	35.4
TOTAL (N-1)	**89.4**	**110.1**	**118.9**	**125.6**	**134.2**	**142.8**	**152.9**
CLN (N)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LLG (N)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFR (N)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PHM (N)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL (N)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Furthermore, feeders CLN22, CLN23, OFR14, OFR21, PHM21 and PHM22 are expected to exceed their system normal (**N**) ratings between financial year (**FY**) 2026 and 2032. This is shown in Table 2.

[1] Victorian Planning Authority – The South East Growth Corridor Plan, Victorian Planning Authority (VPA), 2012.
[2] Pakenham South Employment Precinct, Creating Cardinia, 2024
[3] Officer South (Employment), Victorian Planning Authority (VPA), 2024

Table 2: **Distribution feeder forecast PoE10 overload (MVA) inc. available transfers and demand management**

Load-at-risk (MVA)	FY26	FY27	FY28	FY29	FY30	FY31	FY32
CLN22 (N)	2.4	3.2	3.7	4.3	4.9	5.6	6.4
CLN23 (N)	0.0	0.0	0.0	0.3	1.5	2.7	3.9
OFR14 (N)	0.6	4.5	6.7	8.5	9.5	9.8	10.1
OFR21 (N)	0.7	1.5	1.6	1.7	2.1	2.3	2.6
PHM21 (N)	7.4	11.1	11.2	11.0	11.3	12.5	14.1
PHM22 (N)	0.5	3.8	4.4	6.4	6.6	6.6	6.7
TOTAL (N)	**11.6**	**24.1**	**27.6**	**32.2**	**35.9**	**39.5**	**43.8**

Approximately 43.8 MVA of additional capacity or demand reduction is required by 2032, rising from a present need of 11.6 MVA, through network augmentation or alternative non-network approaches such as demand management, embedded generation, and/or storage to ensure a reliable electricity supply to the Pakenham South & surrounding supply area is maintained.

AusNet uses a probabilistic planning approach to calculate the expected unserved energy (**EUE**) if no mitigation action is taken (i.e., Do nothing base case) to assess whether it is economic to invest in risk mitigation to reduce the forecast supply reliability risk.

A material level of EUE is emerging in the area as shown in Table 3. The calculated EUE considers available load transfers and the unavailability of network asset capacity, weighted using the industry practice of 30% contribution from the 1-in-10 year (**PoE10**) and 70% from the 1-in-2 year (**PoE50**) forecast maximum demand, and monetised using a locational Value of Customer Reliability (**VCR**).

Table 3: **Do nothing base case forecast expected unserved energy (EUE)**

EUE (MWh pa)	FY26	FY27	FY28	FY29	FY30	FY31	FY32
CLN	0.0	0.1	0.1	0.2	0.4	0.7	1.1
LLG	98.6	127.7	141.4	155.7	172.2	192.3	212.4
OFR	0.9	3.9	10.5	16.9	24.0	32.7	42.2
PHM	0.5	1.4	1.9	2.5	3.4	5.1	7.0
CLN22	7.5	22.7	51.1	109.5	196.2	371.2	597.5
CLN23	0.0	0.0	0.0	0.0	2.6	7.9	21.4
OFR14	1.8	248.1	731.0	1,313.1	1,714.8	1,914.0	2,073.1
OFR21	0.4	2.2	3.1	4.5	7.2	11.8	17.8
PHM21	1,664.8	6,222.6	6,483.9	7,646.2	9,100.1	12,452.0	13,486.6
PHM22	0.1	40.6	135.6	350.7	383.7	407.4	437.1
TOTAL (MWh pa)	**1,774.6**	**6,669.3**	**7,558.6**	**9,599.3**	**11,604.6**	**15,395.1**	**16,896.2**
Total ($m, 2025 pa)	**65.4**	**247.1**	**283.1**	**362.0**	**439.1**	**581.3**	**639.6**

By 2032, EUE and its financial impact on customers are forecast to be 16,896 MWh p.a. and $639.6 million (real, $2025) respectively. This presents a forecast deterioration in electricity supply reliability.

The identified need is to address forecast capacity shortfalls on the 22 kV distribution feeders and associated zone substations supplying the Pakenham South & surrounding supply area, in order to maintain electricity supply reliability and facilitate forecast load growth.

Credible options considered

For this RIT-D, AusNet has investigated and evaluated the following network options to address the identified need:

1. Option 1: Pakenham South new zone substation, and new distribution feeders
2. Option 2: Third transformer and bus at Pakenham zone substation, and new distribution feeders
3. Option 3: Third transformer and bus at Officer zone substation, and new distribution feeders
4. Option 4: Second transformer and bus at Lang Lang zone substation, and new distribution feeders

AusNet received no submissions or alternative, non-network or SAPS proposals during the consultation period on the Options Screening Report (**OSR**) published in February 2026 and no submissions on the Draft Project Assessment Report (**DPAR**) published in August 2026. Hence alternative, non-network or stand-alone power system (**SAPS**) solutions are no longer considered credible for the purposes of addressing the identified need of this RIT-D.

Preferred option

The preferred option is that option which maximises the present value (**PV**) of the net economic benefit. Table 4 summarises the cost-benefit analysis undertaken for each option.

Table 4: **Summary of cost-benefit analysis ($ million, 2025)**

Option	PV gross economic benefit	Project capital cost	O&M cost per annum	PV capital and O&M cost	PV net economic benefit	Ranking
Do nothing	0.0	0.0	0.0	0.0	0.0	5
Option 1	8,801	72.2	0.7	80.3	8,720	1
Option 2	7,373	45.8	0.5	50.8	7,322	3
Option 3	3,466	61	0.6	69.5	3,396	4
Option 4	7,491	57.1	0.6	65.0	7,426	2

The option that has been found to maximise the present value of net economic benefit, is Option 1. The robustness of this conclusion has been tested under a range of sensitivities. In each case, Option 1 was confirmed to provide positive economic benefits and is the highest ranked option. Option 1 therefore satisfies the requirements of the RIT-D and is the proposed preferred option at this final stage. The Option 1 aligns with the long-term network development plan for the South East Growth Corridor and supports the ultimate development of Pakenham South and surrounding area. Although the alternative options may have a lower initial capital cost, they would not remove the long-term need for a new ZSS in the area (i.e: The option 1 – preferred option). Implementing an interim alternative would therefore result in additional expenditure and a higher whole-of-life network augmentation cost, compared with progressing Option 1 as the preferred long-term solution now.

The scope of the proposed preferred option involves establishing a new zone substation in Pakenham South, with three new distribution feeders.

The capital cost of the proposed preferred option is approximately $72.2million[4] (real, $2025) with an ongoing operating and maintenance (**O&M**) cost of $0.7 million per annum. The assessment finds that the optimal completion date for the entire option is FY28 with anticipated completion by FY29.

Next steps

The publication of this Final Project Assessment Report (**FPAR**) marks the final step in the RIT-D process, in line with clause 5.17.4(o) of the National Electricity Rules (**NER**)[5] version 254 published by the Australian Energy Market Commission (**AEMC**), and section 4.4 of the RIT-D Application Guidelines[6], published by the Australian Energy Regulator (**AER**).

[4] Total costs includes both Direct + P90 Risk + Indirects (real, $2025).
[5] National Electricity Rules (NER), Australian Energy Market Commission (AEMC), 2026
[6] Regulatory Investment Test for Distribution application guidelines , version 6, Australian Energy Regulator (AER), 2024

In accordance with the provisions set out in clause 5.17.5(c) of the NER, Registered Participants or interested parties may, within 30 days after the publication of this report, dispute the conclusions made by AusNet in this report with the AER.

Accordingly, Registered Participants and interested parties who wish to dispute the recommendation outlined in this report must do so by 6th November 2026. Any parties raising such a dispute are also required to notify to AusNet at ritdconsultations@ausnetservices.com.au. In the subject field, please reference '**RIT-D FPAR Pakenham South & Surrounding Areas**'.

If no formal dispute is raised, AusNet will commence with the investment activities necessary to proceed with the implementation of the preferred option.

2. Introduction

AusNet is a regulated Victorian Distribution Network Service Provider (**DNSP**) that provides electricity distribution services to approximately 845,000 customers. Our electricity distribution network covers eastern rural Victoria and the outer northern and eastern Melbourne metropolitan areas.

The Regulatory Investment Test for Distribution (**RIT-D**) is an economic cost-benefit assessment and consultation process designed to identify the most credible option that addresses an identified need on the network, while maximising net economic benefits for stakeholders in the National Electricity Market (**NEM**) – the preferred option.

This RIT-D has been initiated by AusNet to identify the preferred option to address the supply capacity limitations of the Pakenham South & surrounding supply area within the Cardinia municipality of the Victorian Planning Authority's (**VPA**) South East Growth Corridor[7], a rapidly developing region within south-eastern greater metropolitan Melbourne.

On the 10th February 2026, AusNet published an Options Screening Report (**OSR**) marking the first step in the RIT-D consultation process, in line with clause 5.17.4(b) of the National Electricity Rules (**NER**)[8] published by the Australian Energy Market Commission (**AEMC**), and section 4.2 of the RIT-D Application Guidelines[9], published by the Australian Energy Regulator (**AER**). AusNet received no submissions or alternative, non-network or SAPS proposals during the consultation period on the OSR.

On the 28th August 2026, AusNet published a Draft Project Assessment Report (**DPAR**) marking the second step in the RIT-D consultation process, in line with clause 5.17.4(i) of the NER, and section 4.3 of the RIT-D Application Guidelines. AusNet received no submissions during the consultation period on the DPAR.

AusNet is now publishing this Final Project Assessment Report (**FPAR**) marking the final step in the RIT-D consultation process, in line with clause 5.17(o) of the NER version 2546, and section 4.4 of the RIT-D Application Guidelines.

In accordance with those requirements, this document sets out:

- background information on the network servicing the supply area;
- the identified need that AusNet is seeking to address, together with the assumptions used in identifying this need;
- a summary of submissions received in response to the DPAR;
- a description of the credible options that address the identified need including their costs and lead times;
- the assessment approach and assumptions applied in this RIT-D assessment, including quantification of market benefits and identifying categories of market benefits deemed unlikely to be material; and
- the net present value assessment and identification of the preferred option and its characteristics.

The appendices provide an overview of the RIT-D assessment and consultation process, and an NER compliance checklist.

[7] Victorian Planning Authority – The South East Growth Corridor Plan, Victorian Planning Authority (VPA), 2012.
[8] National Electricity Rules (NER), Australian Energy Market Commission (AEMC), 2026
[9] Regulatory Investment Test for Distribution application guidelines , version 6, Australian Energy Regulator (AER), 2024

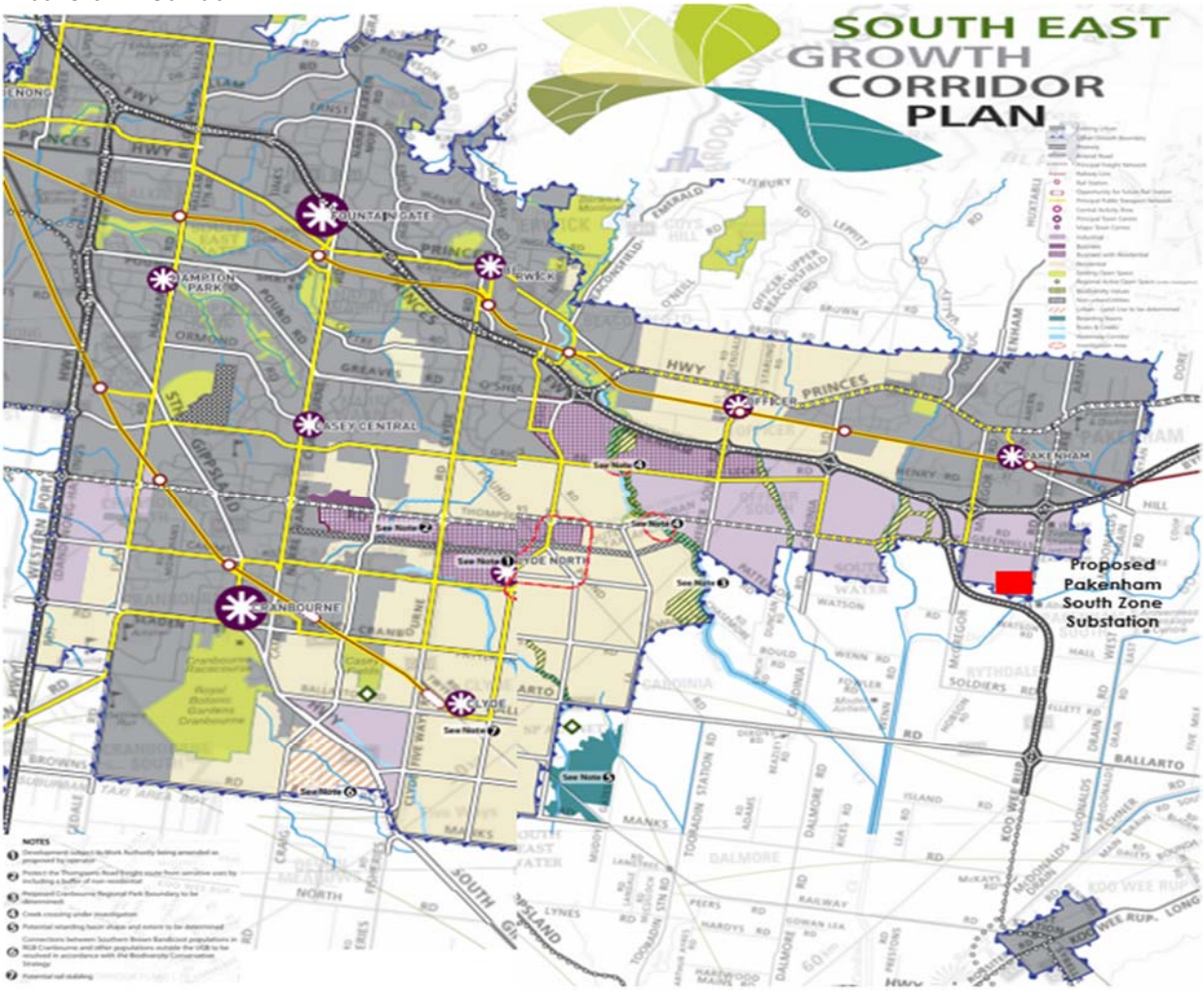
3. Background

The Pakenham South & surrounding supply area on the urban fringes of Melbourne's south-eastern suburbs is a vast greenfield development area located between Officer and Cardinia, to the south of the Princes Highway covered by the Pakenham South Employment Precinct Structure Plan (**PSP**)[10], and the Officer South PSP[11].

The population projection for the relevant local government area of Cardinia indicates a growth rate 2.9% per annum on a base of approximately 123,580 people, representing approximately 49,400 households with an expected growth in households of 1,400 per year.

This area is illustrated in Figure 1 within the broader South East Growth Corridor[12].

Figure 1: South East Growth Corridor



Source: VPA

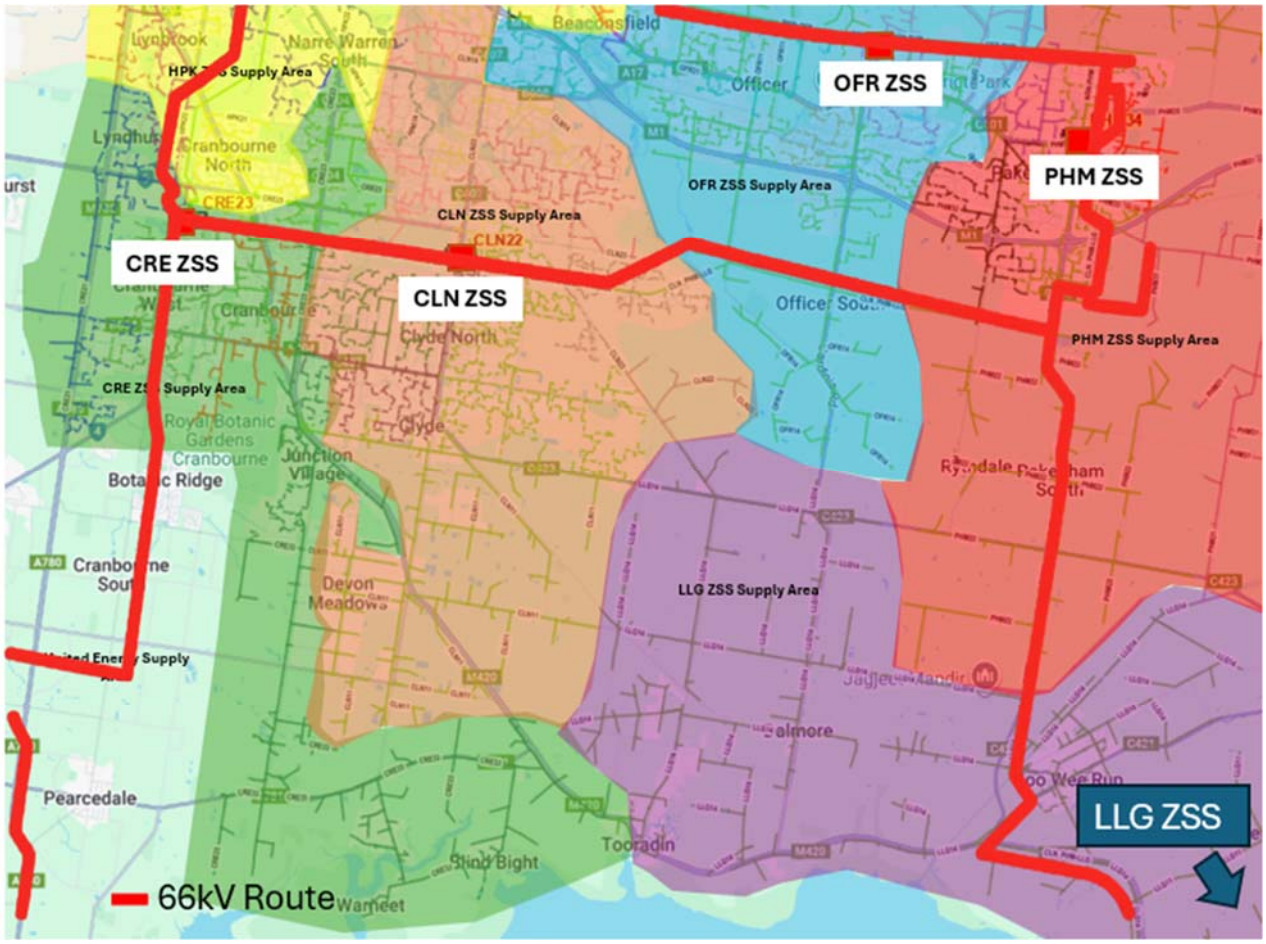
The industries in the region that are expected to experience the strongest growth are: health care and social assistance; retail trade; manufacturing; construction; education and training. AusNet has already received several industrial and commercial customer connection applications in the South East Growth Corridor, including two large business parks in Pakenham South and Officer South, resulting in more than 30 MVA additional load capacity added to our network. All of these loads are expected to be fully operational by 2029.

The region is supplied in part by AusNet's existing five zone substations Clyde North (**CLN**), Cranbourne (**CRE**), Officer (**OFR**), Pakenham (**PHM**) and Lang Lang (**LLG**), through a network of 22 kV distribution feeders supplying

[10] Pakenham South Employment Precinct, Creating Cardinia, 2024
[11] Officer South (Employment), Victorian Planning Authority (VPA), 2024
[12] Victorian Planning Authority – The South East Growth Corridor Plan, Victorian Planning Authority (VPA), 2012.

approximately 122,000 customers, as shown in Figure 2, overlayed by the 66 kV sub-transmission lines supplying the South East Growth Corridor.

Figure 2: South East Growth Corridor 22 kV distribution feeder and 66 kV sub-tranmission network



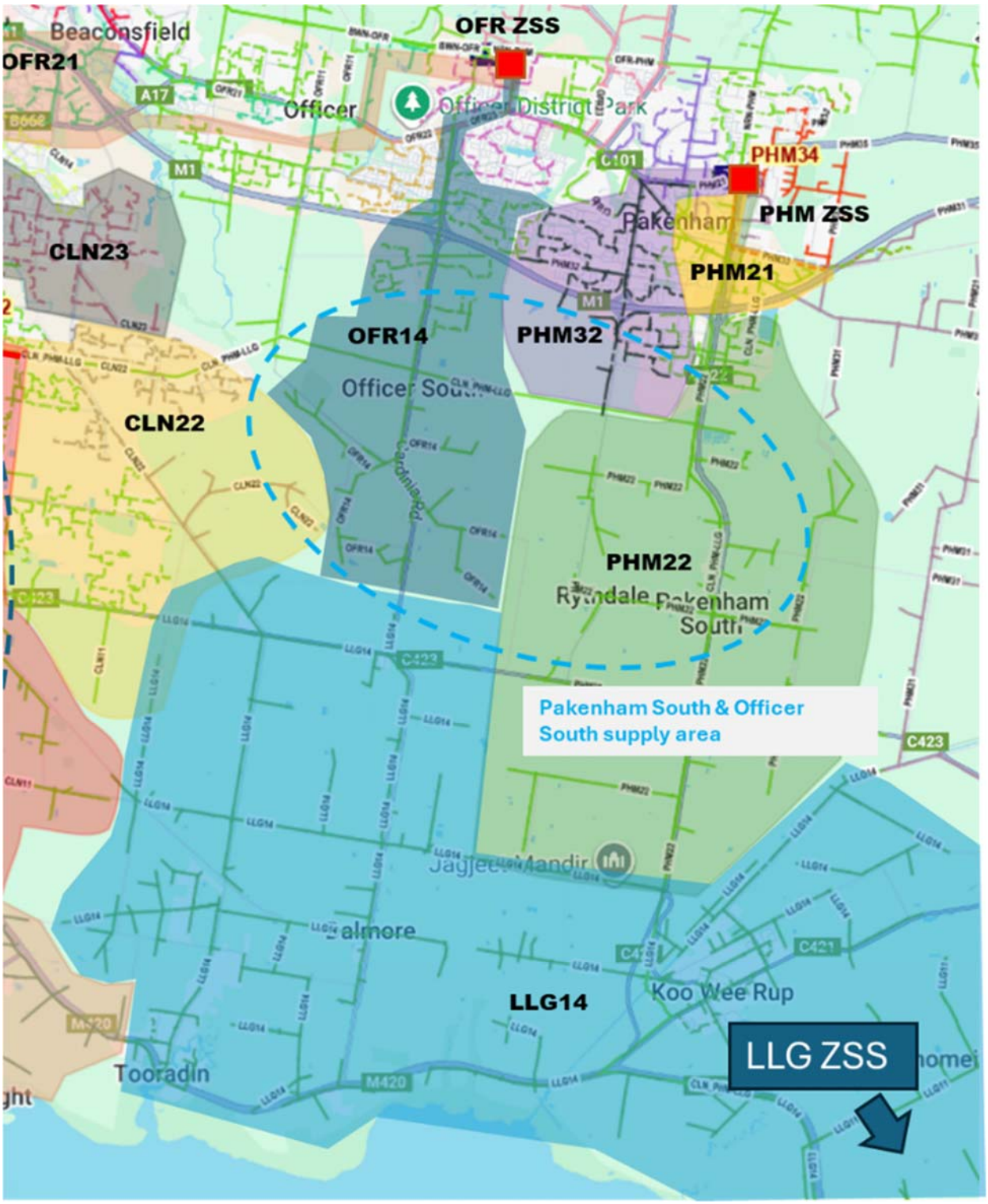
AusNet has developed electricity demand forecasts for the Pakenham South & surrounding supply area, updated to reflect the demands of recent summers, electrification activity, solar PV and battery installations, and the abovementioned developments. AusNet has identified from these forecast maximum demands, increasing levels of load-at-risk, where the demand is forecast to exceed the capacity of some parts of the network.

Of particular concern are existing 22 kV feeders that supply into the development areas:

- CLN22, and CLN23 feeders being in the rapidly growing estates towards east/south/southeast of CLN and brown field areas serving communities in Thompsons Road, Clyde creek, Cranbourne East and Clyde North
- OFR14 and OFR21 serving Officer South employment precinct and surrounding areas
- PHM21 and PHM22 serving Pakenham South industrial precinct and surrounding areas

The coverage of these feeders is shown in Figure 3.

Figure 3: Existing 22 kV network supplying the Pakenham South & surrounding supply area



AusNet has another completed RIT-D[13] with a preferred option to upgrade the sub-transmission loop from the Cranbourne Terminal Station (**CBTS**) to OFR zone substation, driven by the "do nothing" energy at risk. We have assessed the CBTS 66 kV sub-transmission loop supplying the South East growth corridor and determined that, irrespective of the options considered in this RIT-D, the proposed augmentation from CBTS to OFR remains necessary to mitigate energy at risk and is economically justified. Additionally, the proposed CBTS to OFR sub-transmission augmentation has been assessed to have no impact on the 22 kV distribution network options evaluated in this RIT-D. Therefore, it is not included in this RIT-D.

[13] Final Project Assessment Report: East Cranbourne, AusNet November 2025.

4. Identified need

This section provides information regarding the identified need of this RIT-D, and the assumptions used in quantifying the identified need.

4.1. Description of the identified need

The identified need is to address forecast capacity shortfalls on the 22 kV distribution feeders and associated zone substations supplying the Pakenham South & surrounding supply area, in order to maintain electricity supply reliability and facilitate forecast load growth.

The maximum demand at CLN, PHM, OFR and LLG has already exceeded their respective single contingency (**N-1**) ratings. This is shown in Table 5.

Table 5: **Zone substation forecast PoE10 overload (MVA) inc. available transfers and demand management**

Load-at-risk (MVA)	FY26	FY27	FY28	FY29	FY30	FY31	FY32
CLN (N-1)	10.8	15.7	19.7	23.3	29.0	34.1	41.2
LLG (N-1)	28.7	33.1	33.0	33.1	33.2	33.6	33.9
OFR (N-1)	21.1	28.1	33.2	36.2	38.6	40.5	42.4
PHM (N-1)	28.8	33.2	33.0	33.0	33.4	34.6	35.4
TOTAL (N-1)	**89.4**	**110.1**	**118.9**	**125.6**	**134.2**	**142.8**	**152.9**
CLN (N)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LLG (N)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFR (N)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PHM (N)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL (N)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Feeders CLN22, CLN23, OFR14, OFR21, PHM21 and PHM22 are expected to exceed their system normal (**N**) ratings between financial year (**FY**) 2026 and 2032. This is shown in Table 6.

Table 6: **Distribution feeder forecast PoE10 overload (MVA) inc. available transfers and demand management**

Load-at-risk (MVA)	FY26	FY27	FY28	FY29	FY30	FY31	FY32
CLN22 (N)	2.4	3.2	3.7	4.3	4.9	5.6	6.4
CLN23 (N)	0.0	0.0	0.0	0.3	1.5	2.7	3.9
OFR14 (N)	0.6	4.5	6.7	8.5	9.5	9.8	10.1
OFR21 (N)	0.7	1.5	1.6	1.7	2.1	2.3	2.6
PHM21 (N)	7.4	11.1	11.2	11.0	11.3	12.5	14.1
PHM22 (N)	0.5	3.8	4.4	6.4	6.6	6.6	6.7
TOTAL (N)	**11.6**	**24.1**	**27.6**	**32.2**	**35.9**	**39.5**	**43.8**

The forecast demand in the Pakenham South & surrounding supply area shows that there is currently very little capacity remaining within the distribution feeder network, having a total capacity shortfall of 11.6 MVA in 2026, forecast to increase to 43.8 MVA by 2032 with all assets in service[14].

[14] Total (N) load-at-risk in Table 6 and Table 6.

4.2. Quantification of the identified need

AusNet uses a probabilistic planning approach to calculate the expected unserved energy (**EUE**), assuming no mitigation action is taken (i.e., Do nothing base case). This is used to assess whether it is economic to invest in risk mitigation to avoid the forecast deterioration in electricity supply reliability.

We have calculated the EUE by determining the amount of energy that would not be able to be supplied by the CLN22, CLN23, OFR14, OFR21, PHM21 and PHM22 distribution feeders and the CLN, LLG, PHM and OFR zone substations under system normal conditions. We calculate the EUE by using the maximum demand forecast of the feeder or zone substation and multiplying it by its normalised load duration curve to determine the energy at risk based on the amount of time that the forecast load is above the (N) rating, taking into account load transfer capacity.

We have also calculated the EUE by determining the amount of energy that would not be able to be supplied by the CLN, LLG, OFR and PHM zone substations under single contingency conditions. The calculation differs from that of the above by instead using the (N-1) rating and multiplying the overall result by the transformer unavailability, which considers its failure rate and restoration time.

The total EUE is weighted according to 30% of the EUE calculated using a 1-in-10 year (**PoE10**) maximum demand, and 70% of the EUE calculated using a 1-in-2 year (**PoE50**) maximum demand.

The cost of deteriorating reliability to the community is determined by multiplying the total EUE by the Value of Customer Reliability (**VCR**). We have calculated the locational VCR by adopting the Australian Energy Regulator's (**AER**) 2024 VCRs[15] for the different customer segments, weighting them by the mix of customers' annual energy consumption localised, for each relevant network asset.

A material level of EUE is calculated for the Pakenham South & surrounding supply area, as shown in Table 7.

Table 7: **Do nothing base case forecast expected unserved energy (EUE)**

EUE (MWh)	FY26	FY27	FY28	FY29	FY30	FY31	FY32
CLN	0.0	0.1	0.1	0.2	0.4	0.7	1.1
LLG	98.6	127.7	141.4	155.7	172.2	192.3	212.4
OFR	0.9	3.9	10.5	16.9	24.0	32.7	42.2
PHM	0.5	1.4	1.9	2.5	3.4	5.1	7.0
CLN22	7.5	22.7	51.1	109.5	196.2	371.2	597.5
CLN23	0.0	0.0	0.0	0.0	2.6	7.9	21.4
OFR14	1.8	248.1	731.0	1,313.1	1,714.8	1,914.0	2,073.1
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TOTAL (MWh pa)	**1,774.6**	**6,669.3**	**7,558.6**	**9,599.3**	**11,604.6**	**15,395.1**	**16,896.2**
Total ($m, 2025 pa)	**65.4**	**247.1**	**283.1**	**362.0**	**439.1**	**581.3**	**639.6**

By 2032, the EUE and its financial impact on customers are forecast to be 16,896 MWh p.a. and $639.6 million (real, $2025) respectively. This presents a forecast deterioration in electricity supply reliability.

[15] Values of Customer Reliability - Final report, Australian Energy Regulator (AER), 2024

4.3. Summary of identified need

AusNet has identified that approximately 43.8 MVA of additional capacity or demand reduction is required by 2032, rising from the present need of 11.6 MVA, through network augmentation or alternative non-network approaches (such as demand management, embedded generation and/or storage) to maintain a reliable supply of electricity to the Pakenham South & surrounding supply area.

If left unaddressed, these network capacity shortfalls could:

- increase the risk of involuntary load shedding;
- inhibit new customer connections; and
- risk non-compliance with AusNet's regulatory obligations.

Addressing these network capacity limitations will help to ensure that AusNet is able to prudently and efficiently meet forecast electricity demand growth within the Pakenham South & surrounding supply area to:

- support economic growth anticipated for this region;
- support the electrification of homes, businesses and transport[16]; and
- maintain electricity supply reliability and facilitate new customer connections.

4.4. Assumptions underpinning the identified need

Key factors underpinning the quantification of the identified need in this RIT-D include:

- Forecast maximum demand;
- Load duration curves;
- Asset ratings;
- Asset unavailability;
- Load transfer capacity; and
- Demand management.

4.4.1. Forecast maximum demand

The forecast maximum demands for the existing 22 kV distribution feeders supplying the developing part of the Pakenham South & surrounding supply area, being CLN22, CLN23, OFR14, OFR21, PHM21 and PHM22, were developed by AusNet in 2025 and are summarised in Table 8 through to Table 13 respectively.

[16] Refer to Victoria State Government, 'Gas Substitution Roadmap – Update: Victoria's Electrification Pathway.'

Table 8: **Do nothing base case forecast CLN22 maximum demand (MVA)**

CLN22	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Summer PoE10	16.7	17.5	18.0	18.6	19.2	19.9	20.6
Summer PoE50	15.5	16.1	16.5	17.0	17.6	18.2	18.8
Winter PoE10	14.7	15.3	15.8	16.3	16.8	17.5	18.1
Winter PoE50	13.6	14.2	14.6	15.0	15.4	16.0	16.5

Table 9: **Do nothing base case forecast CLN23 maximum demand (MVA)**

CLN23	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Summer PoE10	10.4	11.2	12.3	13.4	14.6	15.8	17.0
Summer PoE50	7.2	7.8	8.7	9.7	10.7	11.8	12.7
Winter PoE10	7.3	8.1	9.6	10.8	11.9	13.3	14.5
Winter PoE50	5.3	6.1	7.4	8.5	9.6	10.8	12.0

Table 10: **Do nothing base case forecast OFR14 maximum demand (MVA)**

OFR14	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Summer PoE10	14.3	18.2	20.5	22.2	23.2	23.5	23.8
Summer PoE50	12.3	16.2	18.4	20.2	21.1	21.4	21.8
Winter PoE10	14.7	18.8	21.2	23.1	24.1	24.6	25.0
Winter PoE50	12.2	16.2	18.7	20.5	21.5	21.9	22.2

Table 11: **Do nothing base case forecast OFR21 maximum demand (MVA)**

OFR21	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Summer PoE10	15.0	15.8	15.9	16.0	16.4	16.6	16.9
Summer PoE50	12.9	13.7	13.8	13.9	14.1	14.3	14.5
Winter PoE10	14.0	14.9	15.2	15.4	15.7	16.0	16.3
Winter PoE50	12.9	13.7	14.0	14.3	14.5	14.8	15.1

Table 12: **Do nothing base case forecast PHM21 maximum demand (MVA)**

PHM21	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Summer PoE10	20.2	23.8	24.0	23.8	24.0	25.3	26.8
Summer PoE50	19.5	23.1	23.2	23.6	24.0	24.6	25.9
Winter PoE10	19.5	23.3	23.6	24.3	25.3	27.3	27.5
Winter PoE50	18.9	22.7	22.8	23.8	24.7	26.7	26.7

Table 13: Do nothing base case forecast PHM22 maximum demand (MVA)

PHM22	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Summer PoE10	14.8	18.1	18.7	20.7	20.9	20.9	21.0
Summer PoE50	14.0	17.4	18.3	19.7	19.8	19.9	20.0
Winter PoE10	14.6	18.5	20.2	20.3	20.3	20.4	20.5
Winter PoE50	13.8	17.9	19.5	19.6	19.6	19.7	19.8

The forecast maximum demands for the 66/22 kV zone substations supplying into the Pakenham South & surrounding supply area being CLN, LLG, OFR and PHM, were developed by AusNet in 2025 and are summarised below in Table 14 through to Table 17 respectively.

Table 14: Do nothing base case forecast CLN maximum demand (MVA)

CLN	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Summer PoE10	100.0	104.9	108.9	112.5	118.2	123.3	130.4
Summer PoE50	84.7	88.9	92.3	96.4	100.5	104.9	109.9
Winter PoE10	69.8	73.9	78.9	83.7	88.7	93.9	101.5
Winter PoE50	64.9	68.8	73.7	78.6	82.9	88.8	95.2

Table 15: Do nothing base case forecast LLG maximum demand (MVA)

LLG	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Summer PoE10	28.7	33.1	33.0	33.1	33.2	33.6	33.9
Summer PoE50	26.1	30.5	30.4	30.4	30.9	31.6	32.0
Winter PoE10	26.1	30.7	31.0	31.3	31.6	32.6	33.2
Winter PoE50	23.9	28.4	28.8	29.1	29.5	30.3	31.0

Table 16 Do nothing base case forecast OFR maximum demand (MVA)

OFR	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Summer PoE10	66.3	73.3	78.4	81.4	83.8	85.7	87.6
Summer PoE50	58.7	65.7	70.8	73.5	75.9	77.4	79.1
Winter PoE10	56.2	63.3	69.6	72.9	75.6	78.1	80.3
Winter PoE50	52.8	60.0	66.1	69.4	71.7	74.5	76.5

Table 17 Do nothing base case forecast PHM maximum demand (MVA)

PHM	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Summer PoE10	73.8	78.2	78.0	78.0	78.4	79.6	80.4
Summer PoE50	67.9	72.5	72.3	72.3	72.9	73.4	74.6
Winter PoE10	65.4	70.1	70.8	71.3	72.3	74.7	76.0
Winter PoE50	62.4	67.0	67.7	68.3	69.4	71.7	73.3

4.4.2. Load-duration curves

Load-duration curves plot demand, normalised as a percentage of the seasonal maximum demand (for summer and winter separately), against the cumulative percentage of time within that season. Demand values are ordered in descending magnitude, such that each point on the load-duration curve represents the proportion of the season for which demand is expected to be greater than or equal to the corresponding load level. Where the product of the load-duration ordinate and the forecast seasonal maximum demand exceeds the seasonal rating, the excess portion, represented by the area above the rating, contributes to EUE.

Figure 4 through to Figure 7 show the load-duration curves for the assets at CLN, LLG, OFR and PHM, respectively.

Figure 4: CLN (and its feeders) load-duration curves

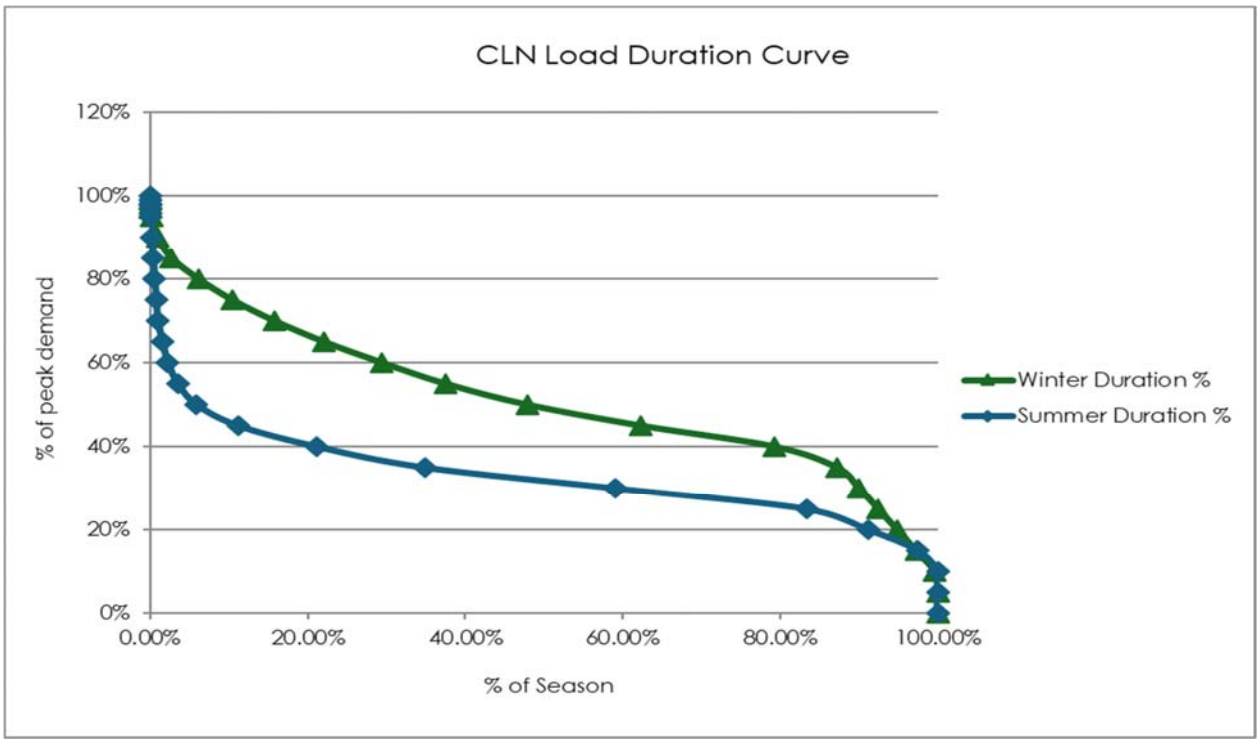


Figure 5: LLG (and its feeders) load-duration curves

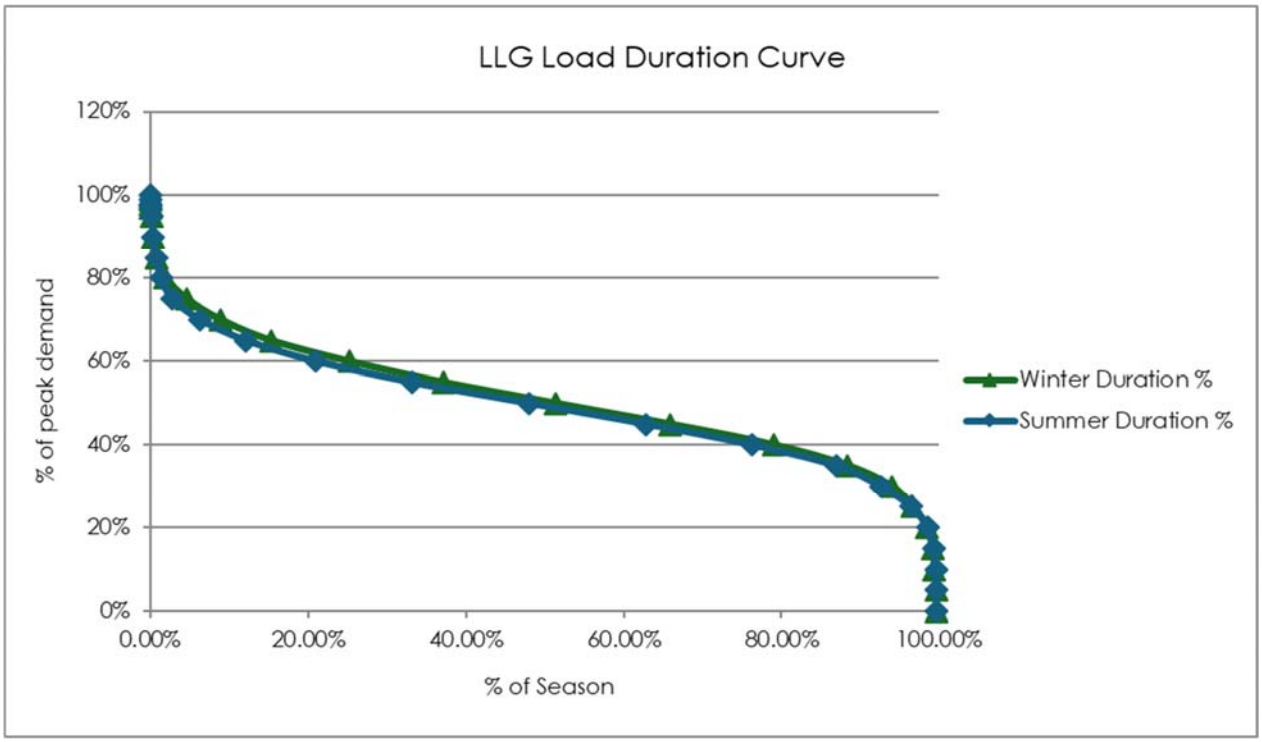


Figure 6: OFR (and its feeders) load-duration curves

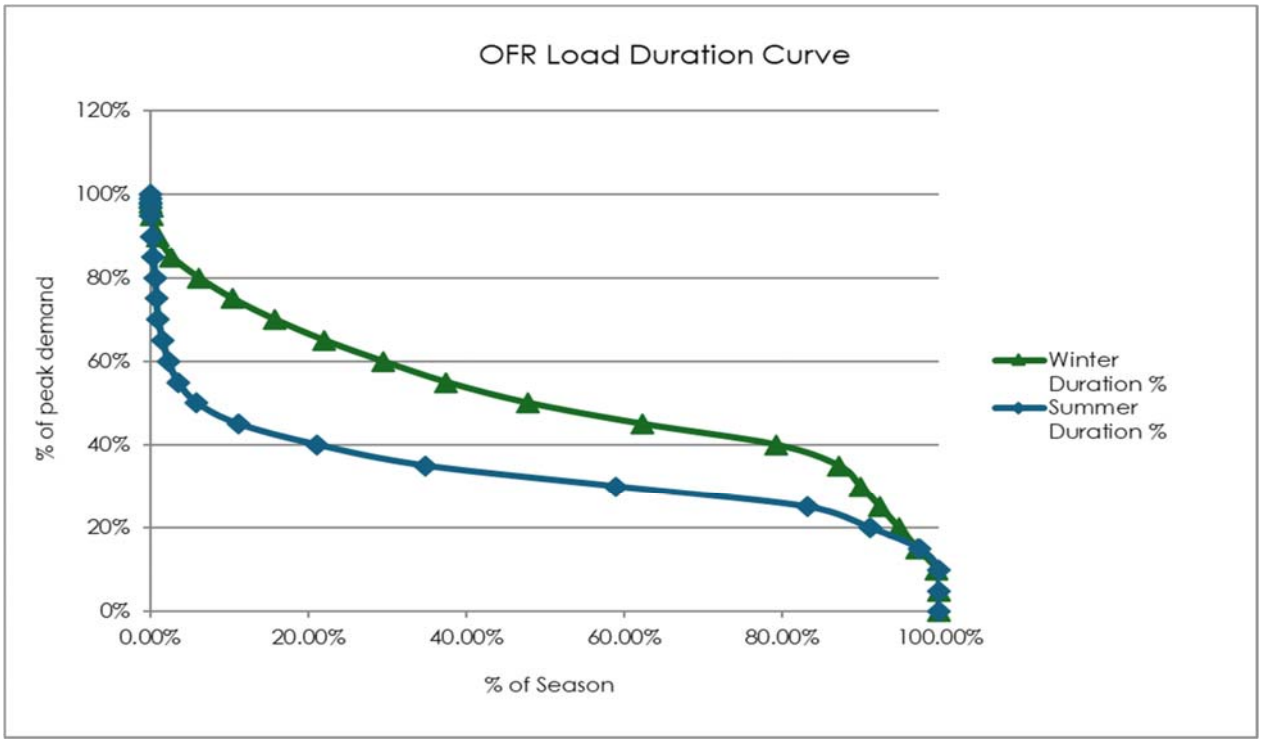
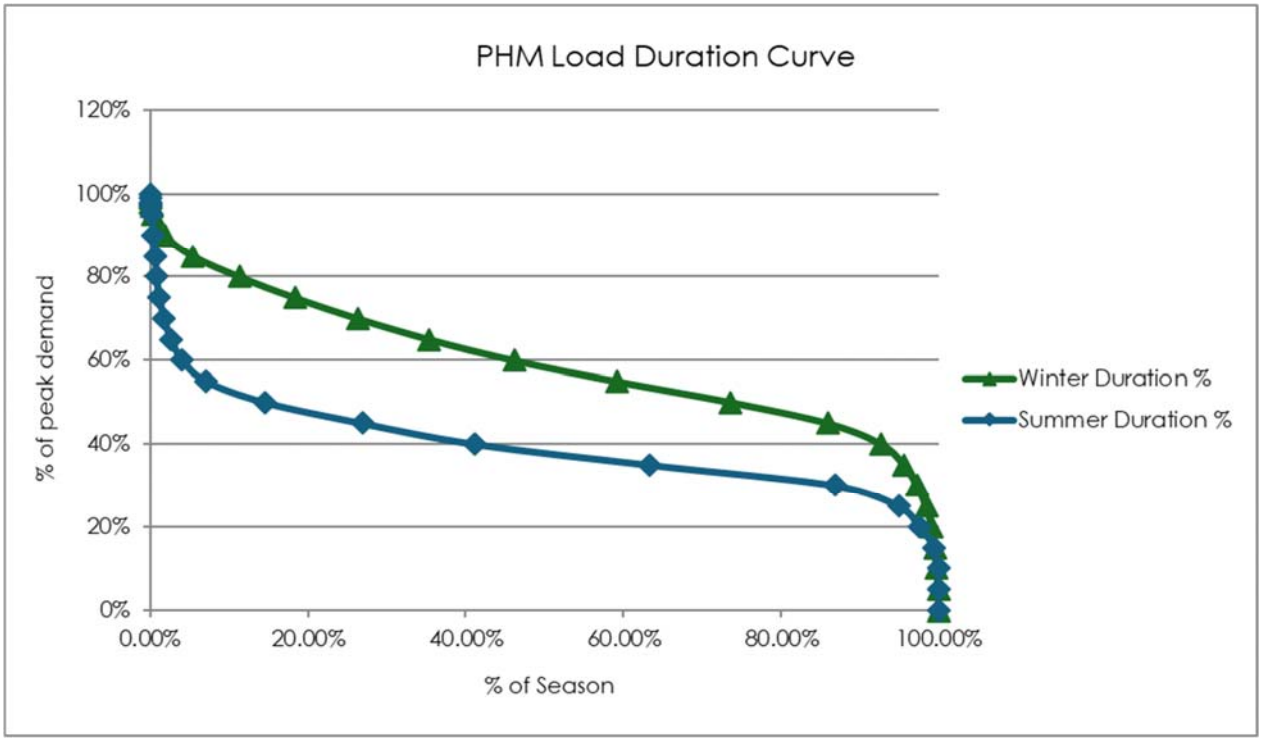


Figure 7: PHM (and its feeders) load-duration curves



4.4.3. Asset ratings

The (N) summer and winter ratings of the distribution feeders that are currently supplying the greenfield growth area within the Pakenham South & surrounding supply area are presented in Table 18.

Table 18: **Do nothing base case distribution feeder ratings (MVA)**

Feeder	Summer	Winter
CLN22	14.3	14.3
CLN23	13.1	13.1
OFR14	13.7	13.7
OFR21	14.3	14.3
PHM21	12.8	12.8
PHM22	14.3	14.3

The (N) and (N-1) summer and winter ratings of the zone substations servicing the Pakenham South & surrounding supply area are presented in Table 19.

Table 19: **Do nothing base case zone substation cyclic ratings (MVA)**

Zone substation	Summer (N)	Winter (N)	Summer (N-1)	Winter (N-1)
CLN[17]	131.0	143.0	89.2	97.8
LLG	47.4	48.3	0.0	0.0
OFR	93.2	93.2	45.2	48.0
PHM	91.9	95.7	45.0	49.1

4.4.4. Asset unavailability

For distribution feeders, AusNet only considers the EUE as material under system normal operating conditions, that is, when the asset demand exceeds the asset rating with all assets in service.

For zone substations, AusNet considers the EUE as material under both system normal and single contingency conditions, that is, when demand exceeds the asset's rating with all assets in service, and also when one asset is out of service. Table 20 shows the 2026 unavailability per transformer used for calculating the single contingency conditions of zone substations.

Table 20: **Transformer unavailability (%)**

Zone substation	Failure rate (% p.a.)	No. of transformers	Restoration time (years)	Unavailability (% p.a.)
CLN[17]	0.38	3	0.3858	0.147
LLG	0.19	1	0.3858	0.073
OFR	0.38	2	0.3858	0.147
PHM	0.03	2	0.3858	0.0105

4.4.5. Load transfer capacity

The forecast load transfer capacity for the assets in proximity to the greenfield growth area within the Pakenham South & surrounding supply area is presented in Table 21. The ability to transfer load from the constrained feeders to neighbouring feeders during peak demand will continue to decline. This is because the neighbouring feeders that

[17] AusNet has considered the impact of the 3rd transformer at Clyde North zone substation which is currently at delivery stage.

currently absorb load from these constrained feeders are themselves already near or at their capacity and will also become constrained.

Table 21: **Do nothing base case forecast load transfer capacity (MVA)**

Transfer capacity	FY26	FY27	FY28	FY29	FY30	FY31	FY32
CLN	18.0	17.7	17.5	17.2	16.9	16.7	16.4
LLG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFR	3.3	3.3	3.2	3.2	3.1	3.1	3.0
PHM	1.7	1.7	1.7	1.6	1.6	1.6	1.6
CLN22	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CLN23	2.7	2.4	2.2	2.0	1.8	1.6	1.4
OFR14	0.5	0.5	0.5	0.5	0.5	0.5	0.5
OFR21	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PHM21	1.4	1.3	1.2	1.0	0.9	0.9	0.8
PHM22	1.2	1.1	0.9	0.9	0.8	0.7	0.6

4.4.6. Demand management

The forecast demand management capacity in proximity to the greenfield growth area within the Pakenham South & surrounding supply area is presented in Table 22.

Table 22: **Do nothing base case demand management capacity (MVA)**

Demand management	FY26	FY27	FY28	FY29	FY30	FY31	FY32
CLN	1.7	1.7	1.7	1.7	1.7	1.7	1.7
LLG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFR	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PHM	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CLN22	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CLN23	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFR14	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFR21	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PHM21	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PHM22	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Although demand management can be contracted for the assets mentioned, customer participation is voluntary. As a result, the full existing demand management capacity may not be available during peak demand. However, for energy at risk modelling, we have assumed that the full existing demand management capacity is available.

5. Summary of submissions

This section summarises the consultation to date and the submissions received on the OSR and DPAR.

The OSR presented an Option 5 (Non-network or SAPS solutions) allowing interested parties to propose alternative, non-network or SAPS solutions that can credibly address the identified need. This included those that can either be combined with another solution to defer or reduce in scope credible network options being considered, and/or mitigate the EUE in the lead up to implementing a network option.

Following the publication of the OSR in February 2026, AusNet did not receive any submission during the consultation period proposing an alternative, non-network or SAPS solution to address the identified need in the Pakenham South & surrounding supply area.

Hence Option 5 was no longer considered credible for the purposes of addressing the identified need of this RIT-D.

The DPAR identified Option 1 (Pakenham South new zone substation, and three new distribution feeders) as the proposed preferred options for addressing the identified need, allowing interested parties to make submissions on this draft conclusion.

Following the publication of the DPAR in August 2026, AusNet did not receive any submissions during the consultation period.

6. Credible options

This section outlines the credible options that are able to address the identified need, including a "do nothing" counterfactual option as the base case for comparing credible options. These include all substantially differing commercially and technically credible options.

Credible options (or a group of options) are those that meet the following criteria:

- addresses the identified need,
- is (or are) commercially and technically feasible, and
- can be implemented in sufficient time to meet the identified need.

The options analysed in this RIT-D to address the identified need in the Pakenham South & surrounding supply area are as follows:

- Option 0: Do nothing base case - no proactive investment intervention
- Option 1: Pakenham South new zone substation, and new distribution feeders
- Option 2: Third transformer and bus at Pakenham zone substation, and new distribution feeders
- Option 3: Third transformer and bus at Officer zone substation, and new distribution feeders
- Option 4: Second transformer and bus at Lang Lang zone substation, and new distribution feeders

Option 1, 2, 3 and 4 are credible network solutions assessed to address the identified need.

Each credible option is further elaborated in the subsequent sections.

6.1. Do nothing

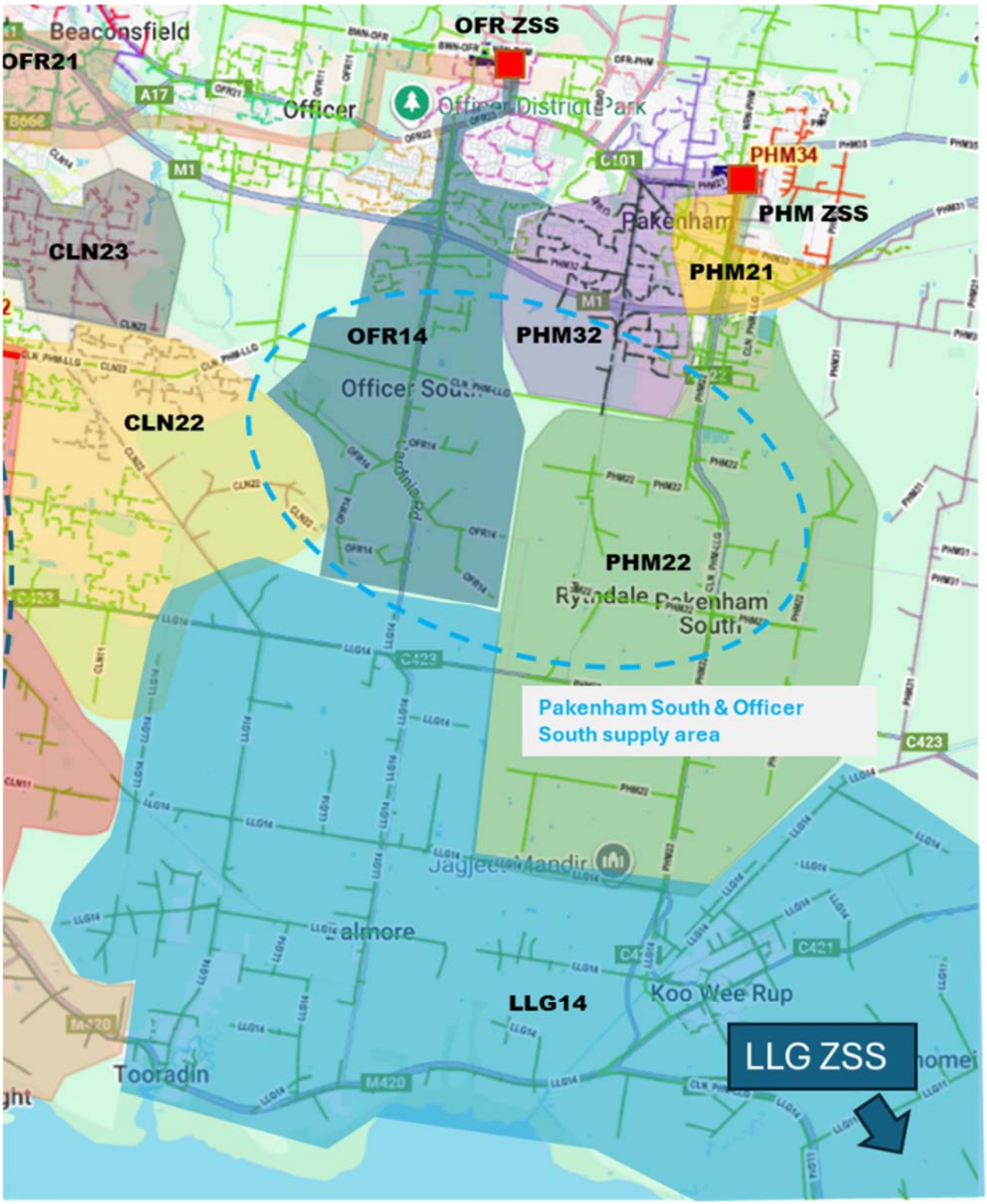
The “do nothing” option assumes that AusNet would not undertake any proactive investment, outside of normal operational and planning processes for managing peak demand and thermal overloading. This option is the counterfactual to the other options considered and establishes the base level of risk (base case) and the basis for comparing other credible options.

While this option does not entail any upfront capital costs, it exposes customers to the continuing and increasing risk of network-induced electricity supply outages, as a result of demand exceeding the available network capacity. The reliability cost of this option is represented by the EUE in Table 7.

Figure 8 presents a detailed view of the existing 22 kV distribution feeders supplying the Pakenham South & surrounding supply area.

With the forecast overloads of our existing zone substations and distribution feeders in this area (presented in Table 5 and Table 6), this option does not address the identified need.

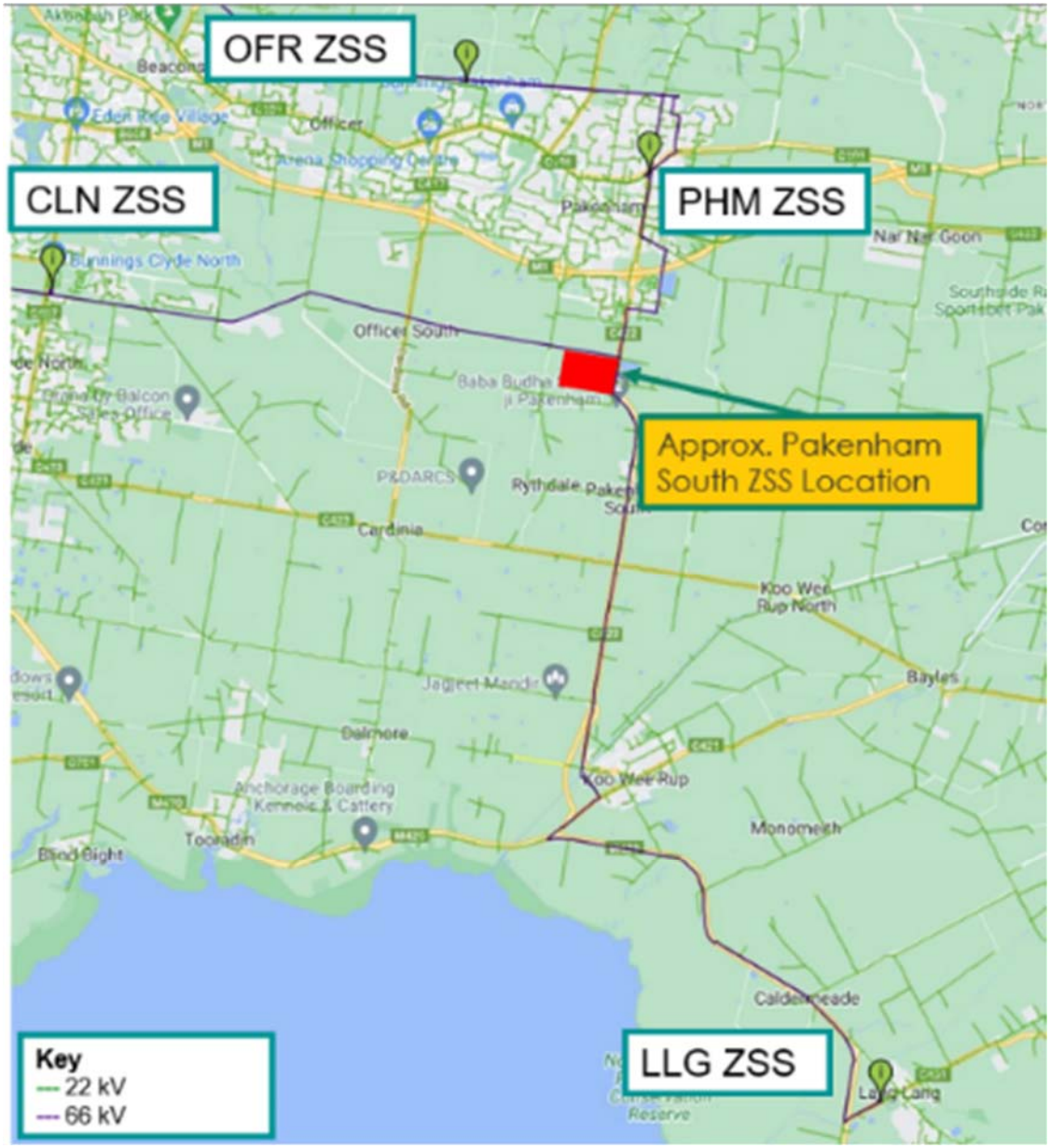
Figure 8: Existing 22 kV network supplying the Pakenham South & surrounding supply area



6.2. Option 1: Pakenham South new zone substation, and new distribution feeders

A new zone substation at Pakenham South is proposed to meet growing maximum demand in the Pakenham South & surrounding supply area. A zone substation site at 995 Koo Wee Rup Road, Pakenham VIC 3810 near the existing tee joint of CLN–PHM–LLG 66 kV sub-transmission line, shown in Figure 9, is centrally located to mitigate most of the energy at risk in the supply area and is ideally located for connection into the existing 66 kV sub-transmission network

Figure 9: Approximate location of the proposed Pakenham South zone substation



The scope of this project is to:

- Install two new 20/33MVA, 66/22 kV power transformers. Scope includes associated civil, structural works, primary works and secondary works.
- Install two new 22 kV urban switch-room switchboards. Scope includes, associated civil, structural works, primary works and secondary works.
- Install three new 22 kV underground/overhead feeders, including associated structures and switches.
- Design, procure, install, and commission of all necessary primary, civil/structural, and secondary equipment for the new 66 kV line entry at remote ends.

Figure 10 presents a detailed view of the proposed new 22 kV distribution feeders supply coverage around the growth in the area after implementing this option.

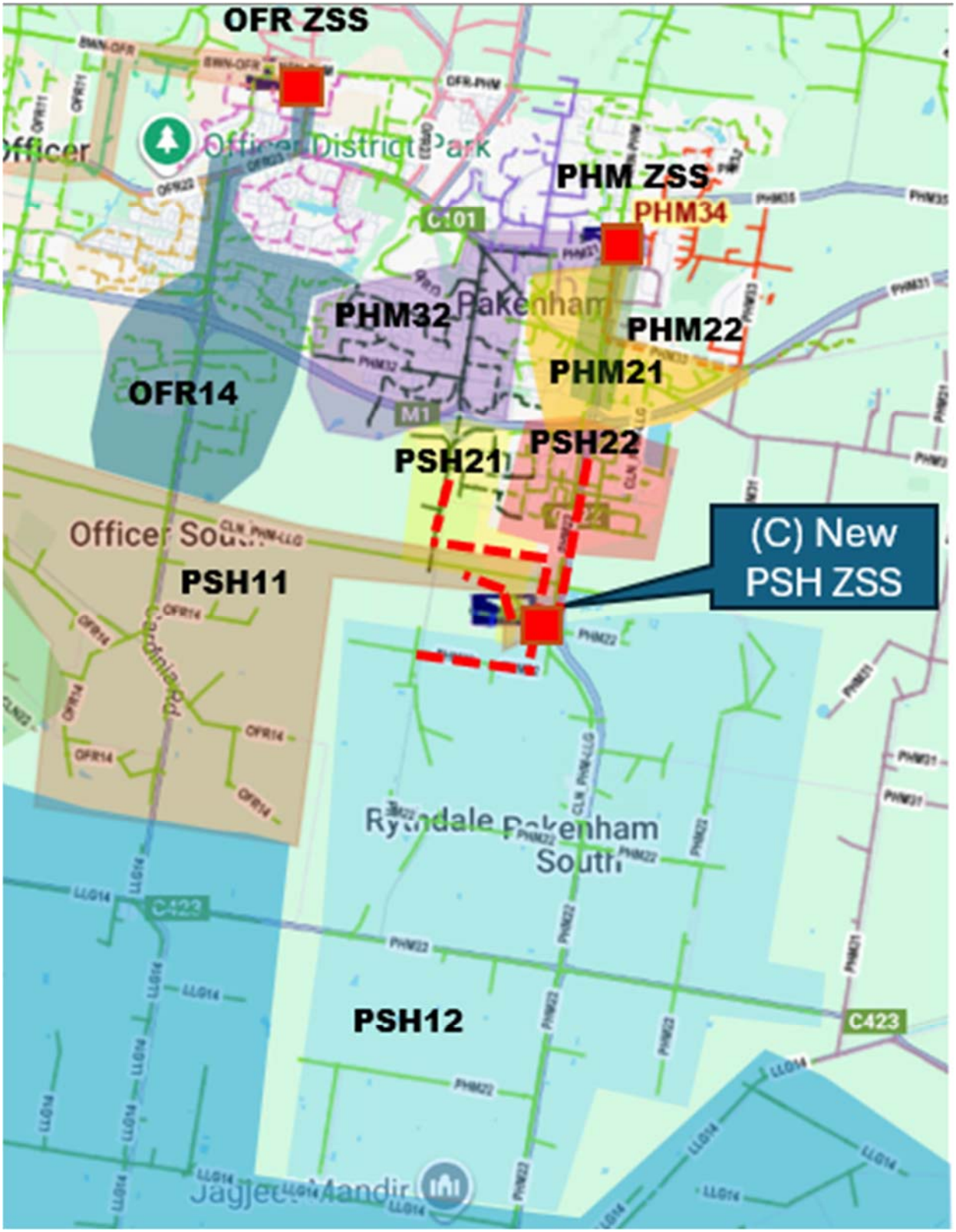
- The proposed three 22 kV distribution feeders would originate from newly established zone substation at Pakenham South to pick up the load centres at North/East/South of the zone substation location.
- The feeders will take on the load from the constrained feeders PHM21, PHM22, OFR14, CLN22, CLN23, and OFR21 to supply the Pakenham South Employment Precinct, Officer Employment Precinct, and surrounding areas of Pakenham, Clyde, and Officer, which are projected to experience significant growth based on the demand forecast. The proposed Pakenham South zone substation is strategically located near these load centres, enabling efficient supply through approximately 13 km of a combination of new underground cables and reconductoring of existing overhead lines to meet the required capacity.
- The proposed feeders will serve industrial/commercial and residential loads and traverse key roads including the recently upgraded Healesville-Koo Wee Rup Road. These areas are experiencing substantial urban transformation driven by increased housing demand and residential subdivisions. The distribution feeders sections include underground installation due to strategic and operational considerations: facilitating future road expansions, ensuring safe transmission line crossings through maintained clearances and reduced electromagnetic induction, and aligning with existing infrastructure and regulatory requirements within urban residential developments.

The estimated total capital cost of this option including sub-transmission, zone substation and distribution feeders is $72.2 million[18] (real, $2025). In relation to O&M expenditure, annual routine maintenance expenditure would be $0.7 million.

The optimal economic timing of this option is FY28 with anticipated commissioning by FY29. The land acquisition costs for the proposed Pakenham South zone substation is included in the above cost.

[18] Total costs includes both Direct + P90 Risk + Indirects (real, $2025).

Figure 10: Proposed distribution feeder supply coverage



6.3. Option 2: Third transformer and bus at Pakenham zone substation, and new distribution feeders

This option proposes to install a third 66/22 kV 33 MVA transformer and associated 22 kV bus works at PHM with three new distribution feeders from a 3rd 22 kV switch-room to provide new 22 kV feeders (as the existing 22 kV switch-rooms have no spare circuit breaker capacity). A fourth 22 kV feeder would instead be supplied from an existing spare circuit breaker at OFR zone substation.

This augmentation will reduce the energy at risk in the Pakenham South & surrounding supply area. However, this option does not fully provide a comprehensive solution for meeting new electricity demand growth given the distance that PHM is from the development areas compared to other potential locations.

The optimal economic timing of this option is FY28 with anticipated commissioning by FY29.

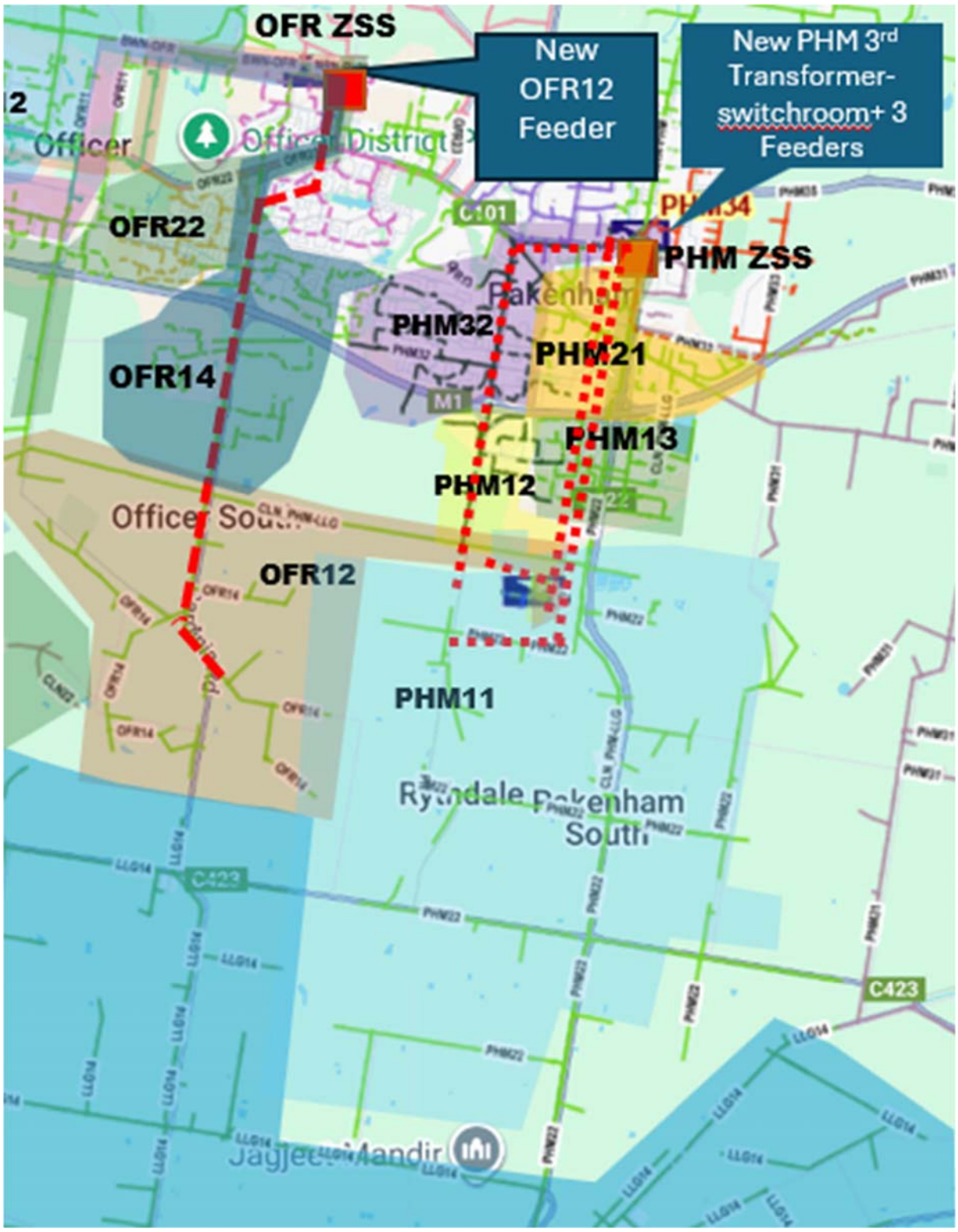
Figure 11 presents a detailed view of the proposed 22 kV distribution feeder supply coverage around the growth area after implementing this option.

- The proposed 22 kV distribution feeder works would originate from the newly established third transformer and bus at the existing Pakenham zone substation including fourth feeder from existing OFR zone substation and traverse through developed urban areas. Most feeders within the developed and underground residential subdivision areas will be installed within developed and underground residential subdivision areas, where compliance with legal requirements mandates underground installation.
- All four feeders will be of significantly longer length as the load centres are far away from existing zone substations, with load centres expansion in the future, it will become more difficult to serve the area
- This approach introduces several construction challenges, including elevated costs associated with boring, traffic management complexities, acquisition of easements, and potential disruptions to the community.
- Additionally, augmenting existing zone substations will inevitably cause temporary interruptions for current customers due to the staging and sequencing of construction activities. These works will also involve modifications to existing feeders to enable effective load management across transformers and feeder networks.

The estimated capital cost of this option including feeders is $45.8 million (real, $2025). In relation to O&M expenditure, annual routine maintenance expenditure would be $0.5 million.

The optimal economic timing of this option is FY28 with anticipated commissioning by FY29.

Figure 11: Proposed distribution feeder supply coverage



6.4. Option 3: Third transformer and bus at Officer zone substation, and new distribution feeders

This option proposes installing a third 66/22 kV, 33 MVA transformer at OFR, along with the associated 22 kV bus works, and constructing three new 22 kV distribution feeders from the new third 22 kV switch-room. The existing 22 kV switch-room has only one spare 22 kV circuit breaker, which will be utilised for a fourth feeder supplied from the existing switch-room. These works collectively provide the additional 22 kV feeders required to service growing maximum demand in the Pakenham South & surrounding supply area.

This augmentation will reduce the energy at risk in the Pakenham South & surrounding supply area. However, this option does not fully provide a comprehensive solution for meeting new electricity demand growth given the distance that OFR is from the development areas compared to other potential locations.

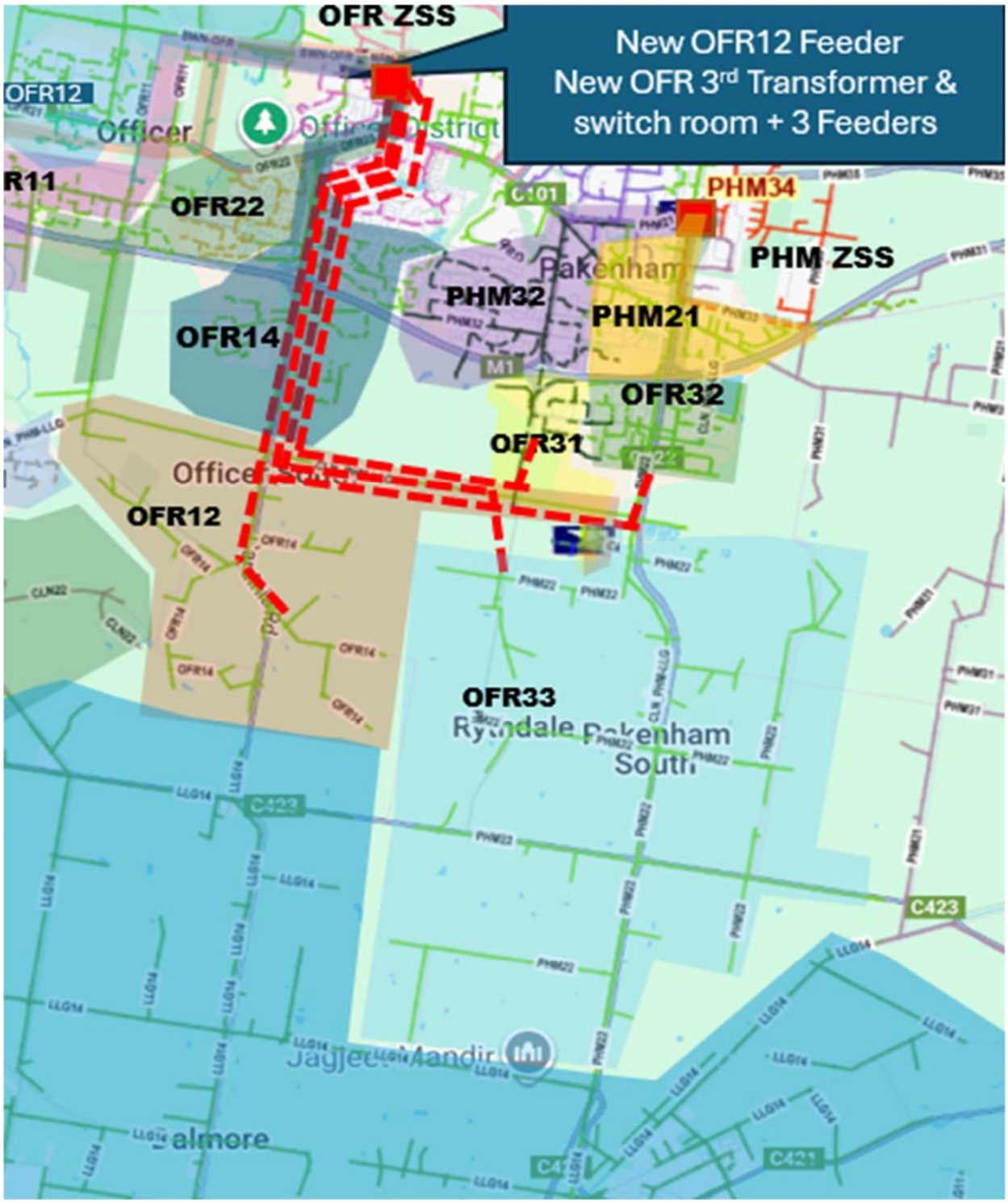
Figure 12 presents a detailed view of the proposed 22 kV distribution feeder supply coverage around the growth area after implementing this option.

- The proposed 22 kV distribution feeder works would originate from newly established third transformer and bus at the existing Officer zone substation including a fourth feeder from an existing OFR bus group and traverse through developed urban areas. Most feeders will be installed within developed and underground residential subdivision areas, where compliance with legal requirements mandates underground installation.
- All the four feeders will be of significantly longer length as the load centres are far away from existing zone substations.
- This approach introduces several construction challenges, including elevated costs associated with boring, traffic management complexities, acquisition of easements, and potential disruptions to the community.
- Additionally, augmenting existing zone substations will inevitably cause temporary interruptions for current customers due to the staging and sequencing of construction activities. These works will also involve modifications to existing feeders to enable effective load management across transformers and feeder networks.

The estimated capital cost of this option including feeders is $60.9 million (real, $2025). In relation to O&M expenditure, annual routine maintenance expenditure would be $0.6 million.

The optimal economic timing of this option is FY28 with anticipated commissioning by FY29.

Figure 12: Proposed distribution feeder supply coverage



6.5. Option 4: Second transformer and bus at Lang Lang zone substation, and new distribution feeders

This option proposes to install a second 66/22 kV 33 MVA transformer and associated 22 kV bus works at LLG, along with three new distribution feeders, and one 22 kV feeder supplied from the existing spare circuit breaker at OFR zone substation to address the growing energy demands in the Pakenham South & surrounding supply area.

This augmentation will eliminate the energy at risk at Lang Lang substation and will substantially reduce the expected energy at risk in the supply area. However, this option does not fully address the energy at risk at other zone substations identified, nor does it provide a comprehensive solution for meeting new electricity demand growth given the distance that LLG is from the development areas compared to other potential locations.

Figure 13 provides an overview of the Lang Lang substation and the available space to accommodate the proposed augmentation.

- The proposed 22 kV distribution feeder works would originate from newly established second transformer and bus at the existing Lang Lang zone substation, including the fourth feeder from the existing OFR zone substation and traverse through developed urban areas. Most feeders will be installed within developed and underground residential subdivision areas, where compliance with legal requirements mandates underground installation.
- All four feeders will be significantly longer length as the load centres are far away from existing zone substations and feeders from Lang Lang need to be REFCL hardened as the feeder will pass through bushfire risk areas.
- This approach introduces several construction challenges, including elevated costs associated with boring, traffic management complexities, acquisition of easements, and potential disruptions to the community.
- Additionally, augmenting existing zone substations will inevitably cause temporary interruptions for current customers due to the staging and sequencing of construction activities. These works will also involve modifications to existing feeders to enable effective load management across transformers and feeder networks.

Figure 13 : Lang Lang zone substation site



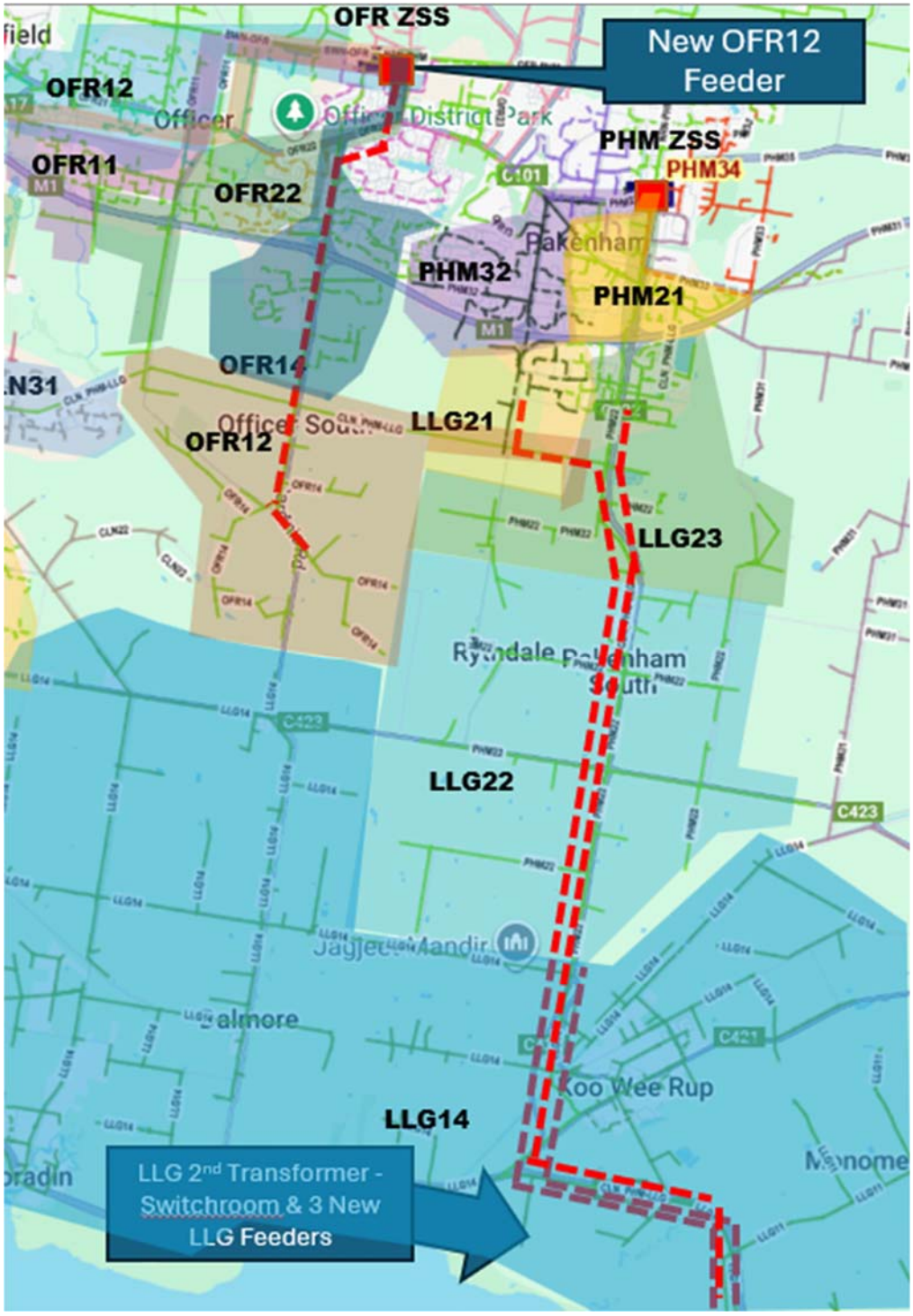
Figure 14 presents a detailed view of the proposed 22 kV distribution feeder supply coverage around the growth area after implementing this option.

The proposed 22 kV distribution feeder works would originate from newly established second transformer and bus at Lang Lang zone substation and extend along existing arterial routes to support the forecast demand in the Pakenham South and Officer South supply area. Some feeder sections are planned for underground installation due to operational considerations: staging and sequencing of construction works, community impacts etc.

The estimated capital cost of this option including feeders is $58.6million (real, $2025). In relation to O&M expenditure, annual routine maintenance expenditure would be $0.6 million.

The optimal economic timing of this option is FY28 with anticipated commissioning by FY29.

Figure 14: Proposed distribution feeder supply coverage



6.6. Community engagement and social licence considerations in credible option identification

In accordance with the AER's RIT-D Application Guidelines, AusNet has considered the need to engage with customers and communities in the assessment of credible options. The Pakenham South and surrounding supply area is a greenfield growth area within the South East Growth Corridor, encompassing the Pakenham South Employment Precinct Structure Plan and Officer South Precinct Structure Plan areas. The majority of the forecast demand is expected to be driven by industrial load developments within these growth precincts AusNet is proposing to construct the Pakenham South ZSS and associated feeders in a commercial and industrial precinct that being established, without residential communities. The feeder routes are intended to be contained within existing utility corridors, without disruption to the operation of the commercial and industrial customers. AusNet acquired the land for the ZSS and feeders early to ensure that there is appropriate and sufficient land to build a ZSS and feeders that do not require disruption or changes to surrounding customers' properties and operations.

As a result, AusNet's assessment is that there are minor impacts which can be managed on the surrounding commercial and industrial customers from the construction of the ZSS and associated feeders, and there is no impact on any residential customers and communities.

Hence, AusNet does not intend to conduct broader stakeholder engagement on the proposed options for the ZSS and feeders. Rather, AusNet will have targeted engagement with local government, Department of Transport (DoT) and the surrounding impacted commercial and industrial customers prior to the construction of the project, to build awareness of the proposed works, address potential concerns and ensure visibility and understanding of the project, For this purpose, AusNet will assign a community engagement advisor to the project to provide project information and respond to stakeholder enquiries. Communication channels will be clearly communicated to the community, including AusNet's website, social media channels and an authorised stakeholder engagement contact number.

7. Assessment approach

Consistent with the AER's RIT-D requirements and RIT-D Application guidelines, AusNet undertook a cost-benefit analysis to evaluate and rank the net economic benefits of the credible options over a 30-year period while assuming a 45-year asset life for network options.

All options considered have been assessed against a business-as-usual or base case where no proactive capital investment to address the identified need is made using the assumptions and methodology detailed in this section.

7.1. Key variables and assumptions

Table 23 lists the key variables applied in the economic assessment, which are essential inputs to our methodology for the purpose of this RIT-D. It also sets out the upper and lower bounds of the range of sensitivities adopted for each of these variables. The detailed results of this modelling are provided in the next section.

In relation to the discount rate, we have adopted central, upper and lower bound estimates that are consistent with the guidance provided by AEMO and the AER. We note that discount rates are subject to change, particularly in the current economic climate. As such, the rates employed in this RIT-D are considered reasonable in exploring the impact of different rates on the cost-benefit assessment of the competing options to address the identified need.

Table 23: Input assumptions used for sensitivity studies

Parameter	Lower bound	Central (base) case	Upper bound
Project cost	70%	100%	130%
VCR	80%	100%	120%
Discount rate[19]	5.56%	7.00%	10.00%
Maximum demand	90%	100%	110%

7.2. Methodology

The purpose of this section is to provide a high-level explanation of AusNet's methodology for identifying the preferred option. As a general principle, it is important that the methodology takes account of the identified need and the factors that are likely to influence the choice of the preferred option. As such, the methodology is not a 'one size fits all' approach, but one that is tailored to the circumstances under consideration.

For this RIT-D, there is a significant market benefit component which is mainly generated by reducing the risk of involuntary load shedding and customer interruptions, quantified using EUE and valued using the VCR. The preferred option is the one that delivers the highest net present value (**NPV**), which is the present value of the sum of the net benefits of implementing that option. The identification of the preferred option is complicated by the fact that the future is uncertain and that various input parameters are 'best estimates' rather than known values. Therefore, the RIT-D analysis must be conducted to test the robustness of the economic analysis to future uncertainty.

To address uncertainty in our assessment of the credible options, we use sensitivity analysis in our cost benefit assessment. Furthermore, as recommended by the AER's application guidelines, we often use sensitivity analysis to also inform a set of reasonable state-of-the-world scenarios.

[19] We have used the discount rate in AEMO 2025 Inputs, Assumptions and Scenarios Report for the central and upper bound values. For the lower bound value we have used AusNet's regulatory WACC.

In our choice of sensitivities and scenarios to our cost benefit assessment, we have regard to the different circumstances that may eventuate that would affect the choice of the preferred option. Where our analysis shows that a preferred option is not vulnerable to changes in circumstances and is clearly preferred, we will not undertake scenario analysis. This approach is consistent with clause 5.17.1(c)(2) of the NER, which states that the RIT–D must not require a level of analysis that is disproportionate to the scale and likely impact of each credible option considered.

7.3. Approach to estimating option costs

The total capital costs presented in this RIT-D includes direct costs, escalations, overheads, finance charges and risk costs.

The costs for each option have been calculated by our cost estimation team based on recent similar project costs and scope. Costs are expected to be within ±30% of the actual cost.

Ongoing operating and maintenance costs are included in the assessment annually from the year after the capital investment, based on 1% of the total capital cost per annum.

All cost estimates are prepared in real 2025 dollars based on the information available at the time of preparing this /FPAR.

7.4. Material classes of market benefits

Clause 5.17.4(j)(5) of the NER requires the RIT-D proponent to consider whether each credible option provides the classes of market benefits described in clause 5.17.1(d). The class of market benefit quantified for this RIT-D include changes in involuntary load shedding and customer interruption.

7.4.1. Involuntary load shedding and customer interruptions

Involuntary load shedding is where a customer's load is interrupted (switched off or disconnected) from the network without their agreement or prior warning. Involuntary load shedding can occur unexpectedly due to a network outage event, or pre-emptively to maintain network loading to within asset capabilities. The aim of implementing a credible option for the options considered in this RIT-D, is to address the identified need by reducing the amount of involuntary load shedding expected.

A reduction in involuntary load shedding, relative to the base case, results in a positive contribution to the market benefits of the credible option being assessed. The avoided involuntary load shedding benefits of a credible option are estimated by multiplying the avoided EUE (in MWh) of involuntary load shedding avoided, assuming the credible option is in place, with the locational VCR (in $/MWh).

AusNet has captured the reduction in involuntary load shedding as a market benefit for the credible options assessed in this RIT-D.

7.4.2. Market benefit classes not relevant or not material to this RIT-D

This section outlines the classes of market benefits that AusNet considers immaterial to this RIT-D assessment, and our reasoning for their omission from this RIT-D assessment. The market benefits that AusNet considers will not materially impact the outcome of this RIT-D assessment include changes in:

- load transfer capacity – the benefits of load transfer capacity are implicitly included in the benefits of avoided Involuntary load shedding and customer interruptions;
- embedded generation - existing generation profiles are not expected to change as a result of the options considered in this RIT-D. Furthermore, AusNet received no market responses for embedded generation or storage solutions as part of the RIT-D consultation process on the OSR. This market benefit is therefore not relevant to this RIT-D;
- voluntary load curtailment – existing network support agreements for demand management is not expected to change for this RIT-D. Furthermore, AusNet received no market responses for demand management

solutions as part of the RIT-D consultation process on the OSR. This market benefit is therefore not relevant to this RIT-D;

- timing of expenditure - there are no expected significant differences between the credible options;
- costs to other parties - there are no expected significant differences between the credible options;
- electrical energy losses – the difference in electricity losses between the options is considered negligible compared to the value of the reduction in involuntary load shedding;
- option value - there will be no impact on the option value in respect of the likely future investment needs;
- safety – there is no difference in network asset safety outcomes between the different options; and
- greenhouse gas emissions – as demonstrated in the next section, the differences in SF_6 emissions from network plant or distributed generation curtailment is considered negligible between the different options, and an immaterial class of market benefit for this RIT-D assessment, whereas changes in emissions due to increased energy supplied relevant for this RIT-D has been captured in section 7.5.

7.5. Assessment of greenhouse gas emissions

AusNet has considered whether each credible option could deliver a market benefit through changes in Australia's greenhouse gas (GHG) emissions, in accordance with clause 5.17.1(c)(4) of the National Electricity Rules (NER). The assessment includes the impact of each option on direct emissions associated with energy supplied, as well as changes in network losses.

For the preferred option, the assessment indicates a net increase of approximately 120,854 tonnes of CO_2-e over the modelling period relative to the do-nothing base case. Applying the AER's Value of Emissions Reduction (VER) methodology results in a present value benefit reduction of approximately $12 million. This represents around 0.1 per cent of the option's total present value net economic benefit.

Consistent with the AER's guidance, sensitivity testing was undertaken by varying the VER by ±25 per cent. The results demonstrate that this variation does not alter the ranking of the credible options. AusNet therefore considers that changes in GHG emissions are not material to the selection of the preferred option.

Nevertheless, this class of market benefit has been quantified for all credible options and incorporated into the calculation of the present value of net economic benefit for each option. A summary of the greenhouse gas assessment is provided in the tables below.

Option	PV emissions benefit - central ($M)	Net change over period (t CO2-e)	PV net economic benefit EXCLUDING emissions ($M)	PV net economic benefit INCLUDING emissions ($M)	Emissions as % of net benefit
Option 1	($12)	(120,854)	$8,720	$8,708	0.13%
Option 2	($16)	(164,364)	$7,322	$7,306	0.22%
Option 3	($23)	(237,835)	$3,396	$3,373	0.68%
Option 4	($15)	(149,793)	$7,426	$7,411	0.20%

Table 24: Greenhouse Gas emissions benefit

8. Economic assessment

This section summarises the results of the economic assessment using cost-benefit analysis and sensitivity analysis to identify the proposed preferred option.

8.1. Cost-benefit analysis

The economic analysis allows comparison of the economic cost and market benefits of each option to rank the options and to determine the optimal timing of the preferred option. It quantifies the PV capital and O&M costs for each option. The PV net economic benefits for each credible option is the PV of gross economic benefits minus the PV of costs, relative to the "do nothing" option. Table 25 summarises the cost-benefit analysis undertaken for each option.

Table 25: **Summary of cost-benefit analysis ($ million, 2025)**

Option	PV gross economic benefit	Project capital cost	O&M cost per annum	PV capital and O&M cost	PV net economic benefit	Ranking
Do nothing	0.0	0.0	0.0	0.0	0.0	5
Option 1	8,801	72.2	0.7	80.3	8,720	1
Option 2	7,373	45.8	0.5	50.8	7,322	3
Option 3	3,466	61	0.6	69.5	3,396	4
Option 4	7,491	57.1	0.6	65.0	7,426	2

The option that has been found to maximise the present value of net economic benefit, is Option 1, delivering a PV net economic benefit of $8,720 million over the analysis period.

8.2. Sensitivity analysis

AusNet has tested the robustness of the option ranking by independently varying the inputs mentioned in Table 23.

Table 26: **Summary of lower bound sensitivity analysis ($ million, 2025), PV net economic benefits**

Option	Project cost	VCR	Discount rate	Maximum demand	Failure rate
Do nothing	0.0	0.0	0.0	0.0	0.0
Option 1	8,744	6,960	10,577	4,530	8,700
Option 2	7,338	5,848	8,815	3,977	7,297
Option 3	3,417	2,703	4,257	1,351	3,368
Option 4	7,445	5,928	8,943	4,068	7,342

Table 27: **Summary of upper bound sensitivity analysis ($ million, 2025), PV net economic benefits**

Option	Project cost	VCR	Discount rate	Maximum demand	Failure rate
Do nothing	0.0	0.0	0.0	0.0	0.0
Option 1	8,696	10,480	6,052	14,468	8,741
Option 2	7,307	8,797	5,162	11,980	7,348
Option 3	3,376	4,090	2,189	6,972	3,426
Option 4	7,406	8,924	5,231	12,095	7,510

Under all sensitivities, the present value of net economic benefit for Option 1 remains positive and is greater than all other options.

8.3. Proposed preferred option

The option that has been found to maximise the present value of net economic benefits, is Option 1, delivering a net economic benefit of $8,720 million over the analysis period.

The robustness of this conclusion has been tested under a range of sensitivities. In each case, Option 1 was confirmed to provide positive economic benefits and is the highest ranked option. Option 1 therefore satisfies the requirements of the RIT-D and is the proposed preferred option at this final stage.

The scope of the proposed preferred option involves establishing a new 66/22 kV zone substation in Pakenham South with two 33 MVA transformers, two 22 kV busbars and three new 22 kV feeder exits connected into the existing 22 kV distribution network.

The capital cost of the proposed preferred option is approximately $72.2 million (real, $2025) with an ongoing O&M cost of $0.7 million per annum

8.4. Proposed investment timing

Optimal timing occurs in the first year when the gross economic benefits become larger than the annualised cost of the proposed preferred option. The proposed investment timing is then set either to this optimal timing, or delayed by the construction period, whichever comes later.

Table 28: **Optimum commissioning year**

$ million (real, $2025)	FY27	FY28	FY29	FY30	FY31
Annualised cost	5.7	5.7	5.7	5.7	5.7
Gross economic benefit	246	355	432	573	630

The gross economic benefit is already well in excess of the annualised cost. Hence, the proposed investment timing is determined by the construction period.

Given the construction period is 2 years, The optimal economic timing of this option is FY28 with anticipated completion by FY29

9. Next steps

The publication of this FPAR marks the final step in the RIT-D process, in line with clause 5.17.4(o) of the NER, and section 4.4 of the RIT-D Application Guidelines.

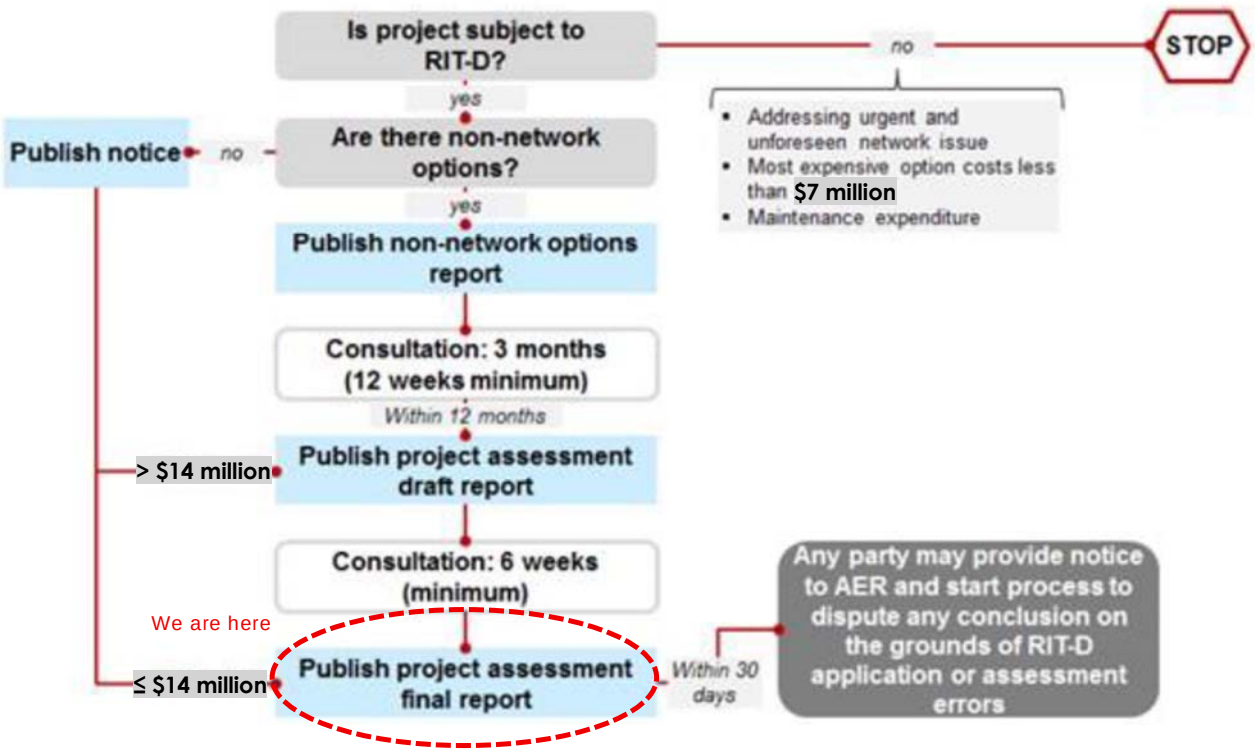
In accordance with the provisions set out in clause 5.17.5(c) of the NER, Registered Participants or interested parties may, within 30 days after the publication of this report, dispute the conclusions made by AusNet in this report with the AER.

Accordingly, Registered Participants and interested parties who wish to dispute the recommendation outlined in this report must do so by 6th November 2026. Any parties raising such a dispute are also required to notify to AusNet at ritdconsultations@ausnetservices.com.au

In the subject field, please reference '**RIT-D FPAR Pakenham South & Surrounding Areas**'.

If no formal dispute is raised, AusNet will commence with the investment activities necessary to proceed with the implementation of the preferred option.

A. Appendix A - RIT-D assessment and consultation process



B. Appendix B - Compliance with NER

In accordance with clause 5.17.4(j)(11)(iv) of the NER, we certify that the preferred option satisfies the regulatory investment test for distribution. Table 29 shows how each of these requirements have been met by the relevant section of this FPAR.

Table 29: Compliance with regulatory requirements

Requirement	Section
Clause 5.17.4(j) of the NER, the final project assessment report must include the following:	
1. a description of the identified need;	Section 4
2. the assumptions used in identifying the identified need (including, in the case of proposed reliability corrective action, why the RIT-D proponent considers reliability corrective action is necessary);	Section 4
3. if applicable, a summary of, and commentary on, the submissions on the options screening report (and draft project assessment report - clause 5.17.4(r)(1)(ii));	Section 5
4. a description of each credible option assessed;	Section 4
5. where a Distribution Network Service Provider has quantified market benefits in accordance with clause 5.17.1(d), a quantification of each applicable market benefit for each credible option;	Section 8
6. a quantification of each applicable cost for each credible option, including a breakdown of operating and capital expenditure;	Section 8
7. a detailed description of the methodologies used in quantifying each class of cost and market benefit;	Section 9
8. where relevant, the reasons why the RIT-D proponent has determined that a class or classes of market benefits or costs do not apply to a credible option;	Section 9
9. the results of a net present value analysis of each credible option and accompanying explanatory statements regarding the results;	Section 8
10. the identification of the proposed preferred option;	Section 8
11. for the proposed preferred option, the RIT-D proponent must provide; i. details of the technical characteristics; ii. the estimated construction timetable and commissioning date (where relevant); iii. the indicative capital and operating cost (where relevant); iv. a statement and accompanying detailed analysis that the proposed preferred option satisfies the regulatory investment test for distribution; and v. if the proposed preferred option is for reliability corrective action and that option has a proponent, the name of the proponent; and	Section 8
12. contact details for a suitably qualified staff member of the RIT-D proponent to whom queries on the draft report may be directed;	Section 9
13. if the estimated capital cost of the proposed preferred option is greater than $103 million (as varied in accordance with a cost threshold determination), include the RIT reopening triggers applying to the RIT-D project.	Not applicable
14. AER RIT-D Application Guidelines: consideration of community engagement and social licence matters when identifying and assessing credible options.	Section 6.6

15. Clause 5.17.1(c)(4) of the NER: consideration of whether each credible option could deliver a market benefit through changes in Australia's greenhouse gas emissions, including quantification where relevant.	Section 7.5

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